UGUST 7, 1961
Volume 50, No. 16

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•

OFFICIAL PUBLICATION OF THE PROCEEDINGS AMERICAN ASSOCIATION OF TEXTILE CHEMISTS AND COLORISTS

AMERICAN DYESTUFF REPORTER

TEXTILE WET-PROCESSING

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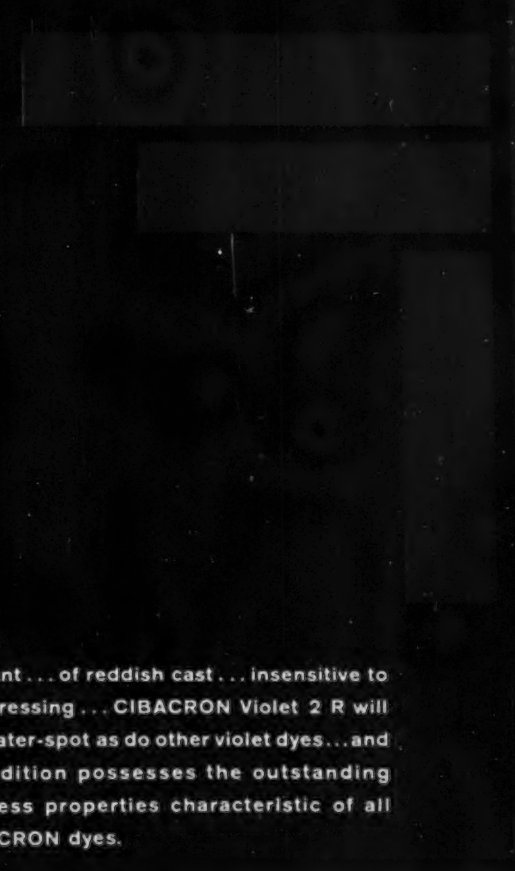
VIOLET 2R



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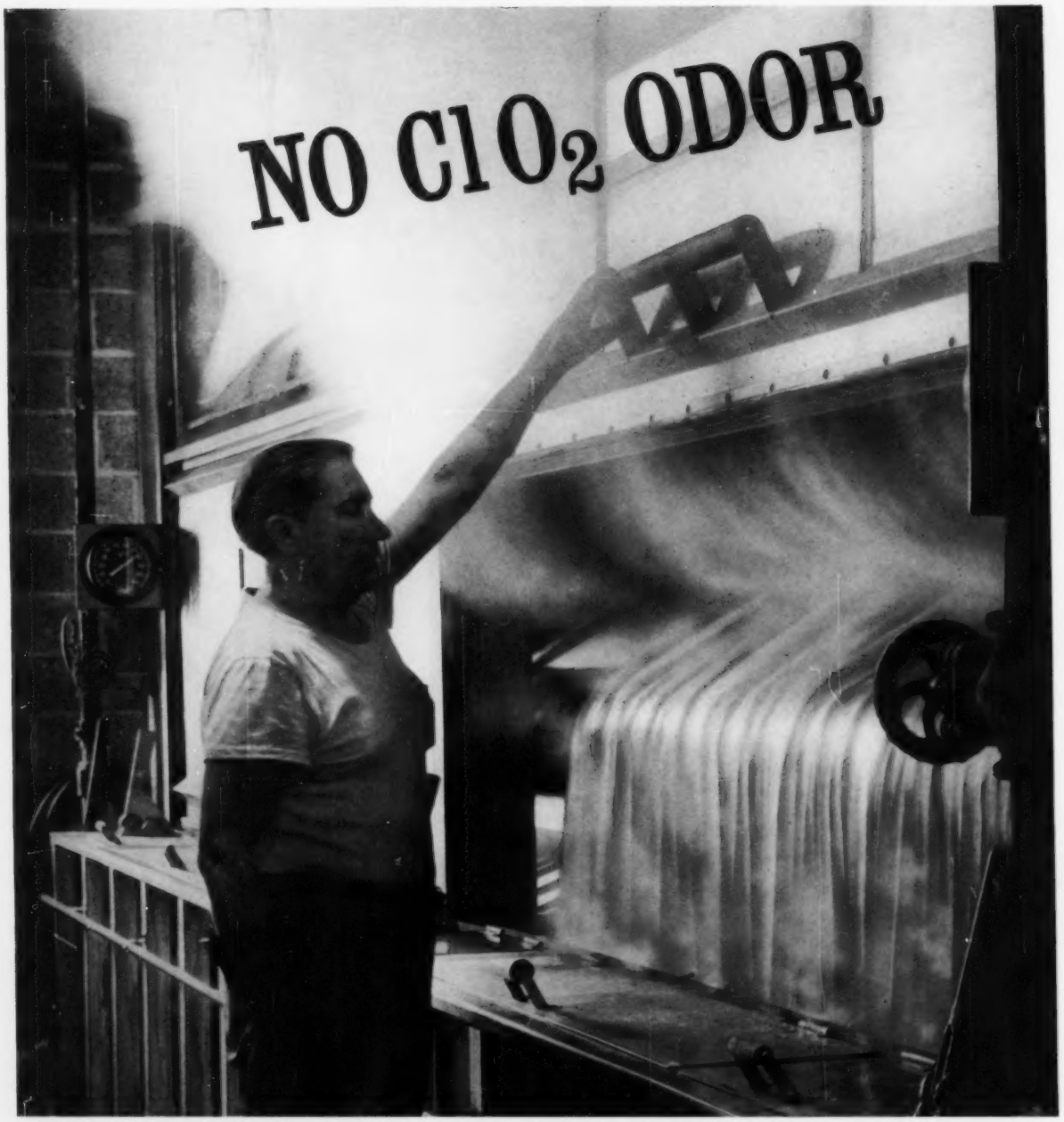

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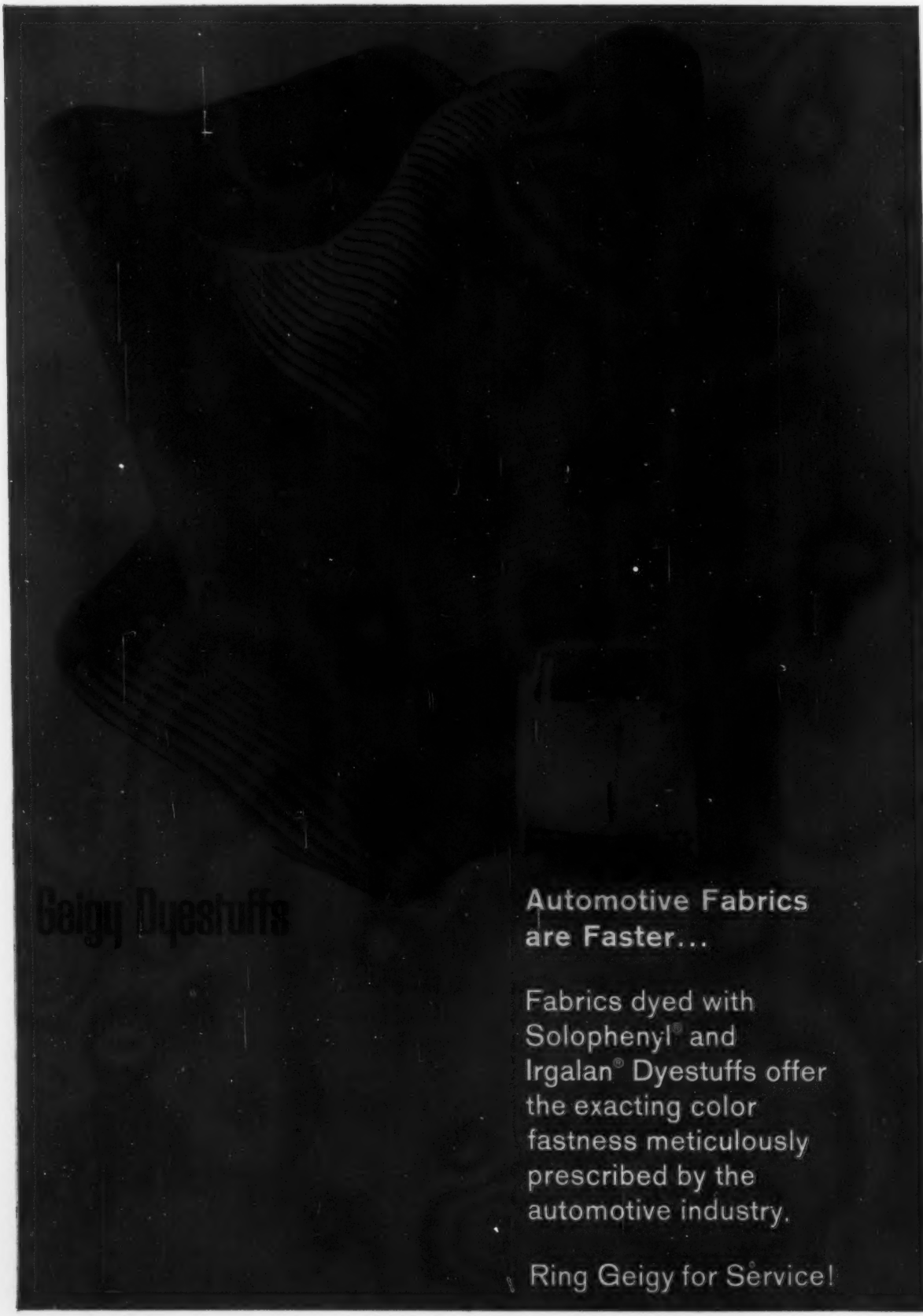
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VOLUME 50 August 7, 1961 NUMBER 16

specially contributed

Improvement of Lightfastness of Dyeings on Synthetic Fibers by Ultraviolet Absorbers 21 (583)
A F Strobel

aatcc proceedings

Symposium on "Textile Finishing"——
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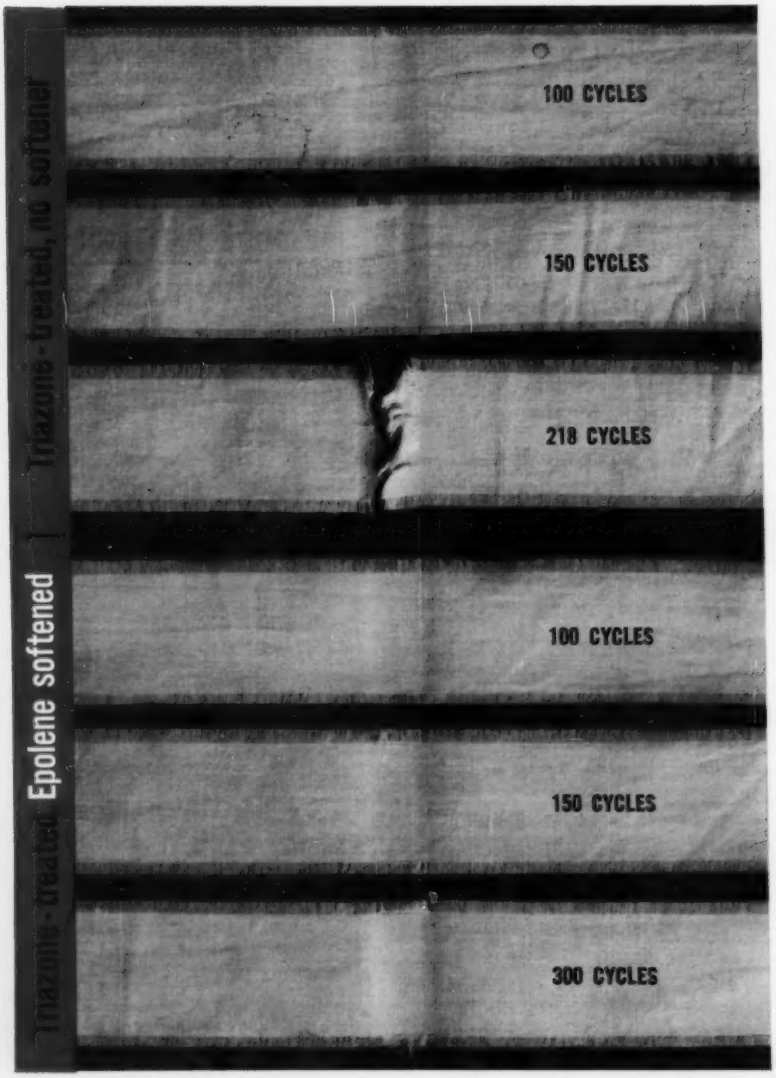
The Stoll-Flex Abrasion Test demonstrates the increased strength given to a resin-treated cotton fabric by an Epolene softener.



IT is axiomatic in the textile industry that the finishing resin alone does not a wash-and-wear fabric make. In fact, the variables are many, and often complex.

Of primary importance is selection of the softener. If properly chosen to match the specific type of finishing resin to be used, the combination can provide the optimum in tear strength, abrasion resistance, crease recovery, hand, and sewability for the treated fabrics.

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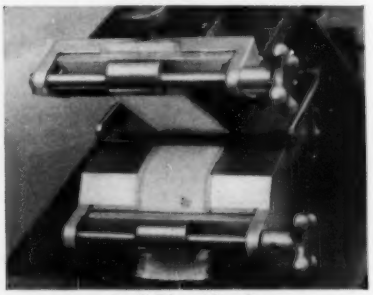

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wear resins in use today. These include triazone, triazene, melamine formaldehyde, methylated melamine formaldehyde, dimethylol ethylene urea, and methylated urea-formaldehyde type finishing resins. The results of these test procedures are available to aid you in selecting the right softener for your finishing requirements.

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ADR OPEN FORUM

August 7, 1961

WE have read with interest the article in the July 10th "Open Forum" about the revision of the textile courses at Clemson College, with the shift in emphasis toward industrial management, postgraduate work toward the doctorate, and a textile research program. This is all very good and there is no doubt but what the industry to survive needs this type of trained personnel, but there is also another problem coming to the forefront at a somewhat alarming rate that also needs attention. By this I am referring to the dearth of potential shift dyers, finishers and laboratory colorists for tomorrow's industry. What sort of trained men will be available to replace those now in positions of responsibility, but who will be lost to industry by normal attrition or who will see greener pastures in other types of work during the next 10 years? Will these positions be taken by today's students who are majoring in industrial management, taking post graduate work, or engaging in advanced research? All of us are familiar with conditions in today's mill know the answer will be "No".

In the dyehouse of today, management and supervision is confronted with problems more complex than at any time in the history of this ancient and formerly respected industry. Up until a few years ago the silk dyer dyed silks and no other fiber, and there was probably a light-shade dyer and a heavy-shade dyer; the wool dyer dyed wool and usually wool alone, and the same was true of the cotton dyer. Today there are few dyers who do not find it necessary to dye several of the major fibers. The dyer today has to be experienced in the dyeing of mixtures and blends of many fibers, both natural and man-made. The finisher whose problems in the past were mostly of a mechanical nature now finds he must have a working knowledge of polymer chemistry. Still the shift dyer and finisher, notwithstanding the complexity of his work, is expected to meet exacting specifications, maintain good personnel relations, show improved cost figures and satisfactory production records.

During the past few years there has been a slowdown in the introduction of new types of fibers, but this has not simplified matters any as we have been flooded with so many modifications and variations of the many fibers extant. Not only do we have two types of nylon, the 6 and the 66, but the many variations and modifications of the various manufacturers. Still the dyer and finisher is expected to produce uniform shades and quality from day to day.

I assure you that this production is not guided through the plant by men with advance training in textile research or by those with their doctorate. Production is under control of those men, many with less than high school education, who have put in their apprenticeship in the finishing plant, often starting in the drug room and working their way up through the plant, learning every detail of all the many operations. But are we giving enough thought to the training of these men who are going to be tomorrow's supervisors, where and how are we training them? There was a time that most of the larger dyestuff selling organizations made a point of training many colorists who were available to industry. Today this practice has reversed and the mill laboratories are training the men for the selling organizations.

My experience has been that an alert, intelligent and aggressive young man who has not had the opportunity for advanced education, but has the intellect to comprehend and understand plant problems, with good training and experience will make an excellent shift supervisor and frequently can be worked up to the plant superintendent's position. But just how are we going to get these men interested in this work, and are we going to have enough trained during the next few years? Many mills have had the attitude that this type man was a common commodity in the market, to be picked up at their convenience. Perhaps this was true a few years ago, but the well is just about dry at this time.

With all due respect to the advance courses of training for the textile student, isn't there a need of some type of a training program for the young man unable to attend college, but who has the potential of making a good mill supervisor? Courses that give him a chance to review his mathematics, get acquainted with elementary chemistry, textile technology, testing, fundamentals of dyeing and finishing, etc? These could be sponsored by the mill, by the public schools, trade schools, night schools, etc, but whoever sponsors it, it appears to be a necessity that must not be overlooked or we may be forced to hire help that is not up to the standards we would prefer to maintain or that are for the good of the industry.

CLARENCE HOOPER
Burlington House Fabrics Laboratory
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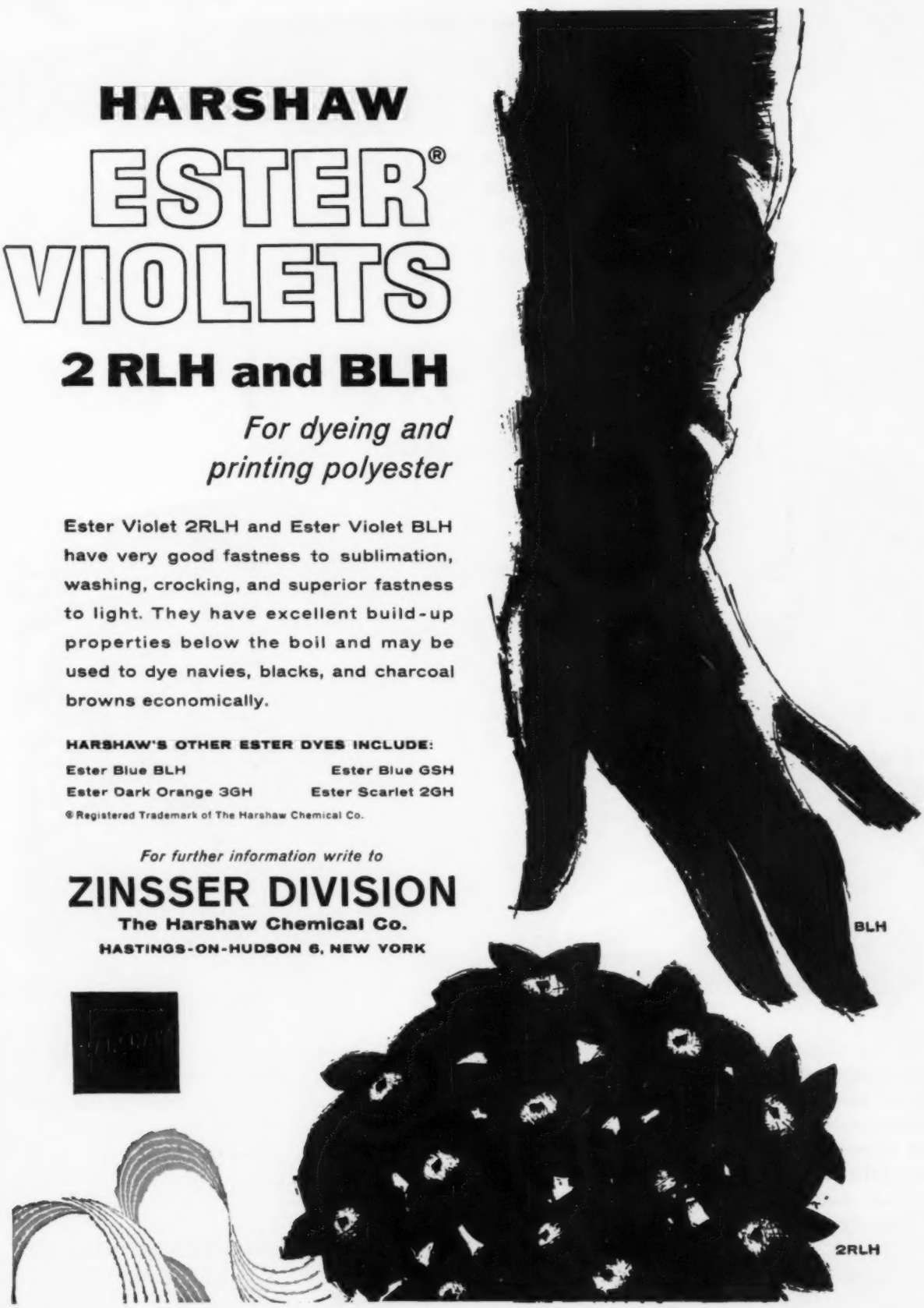

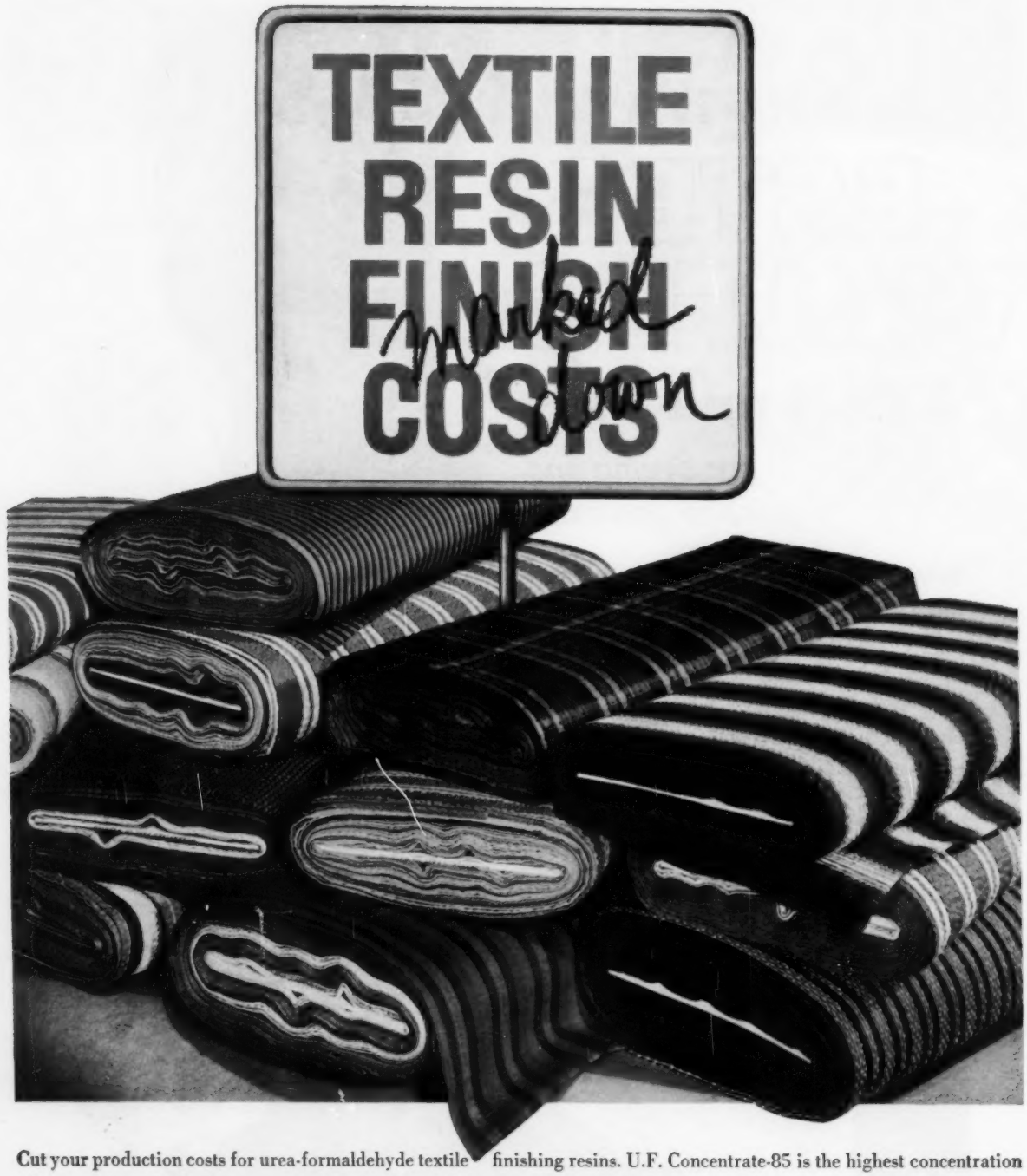

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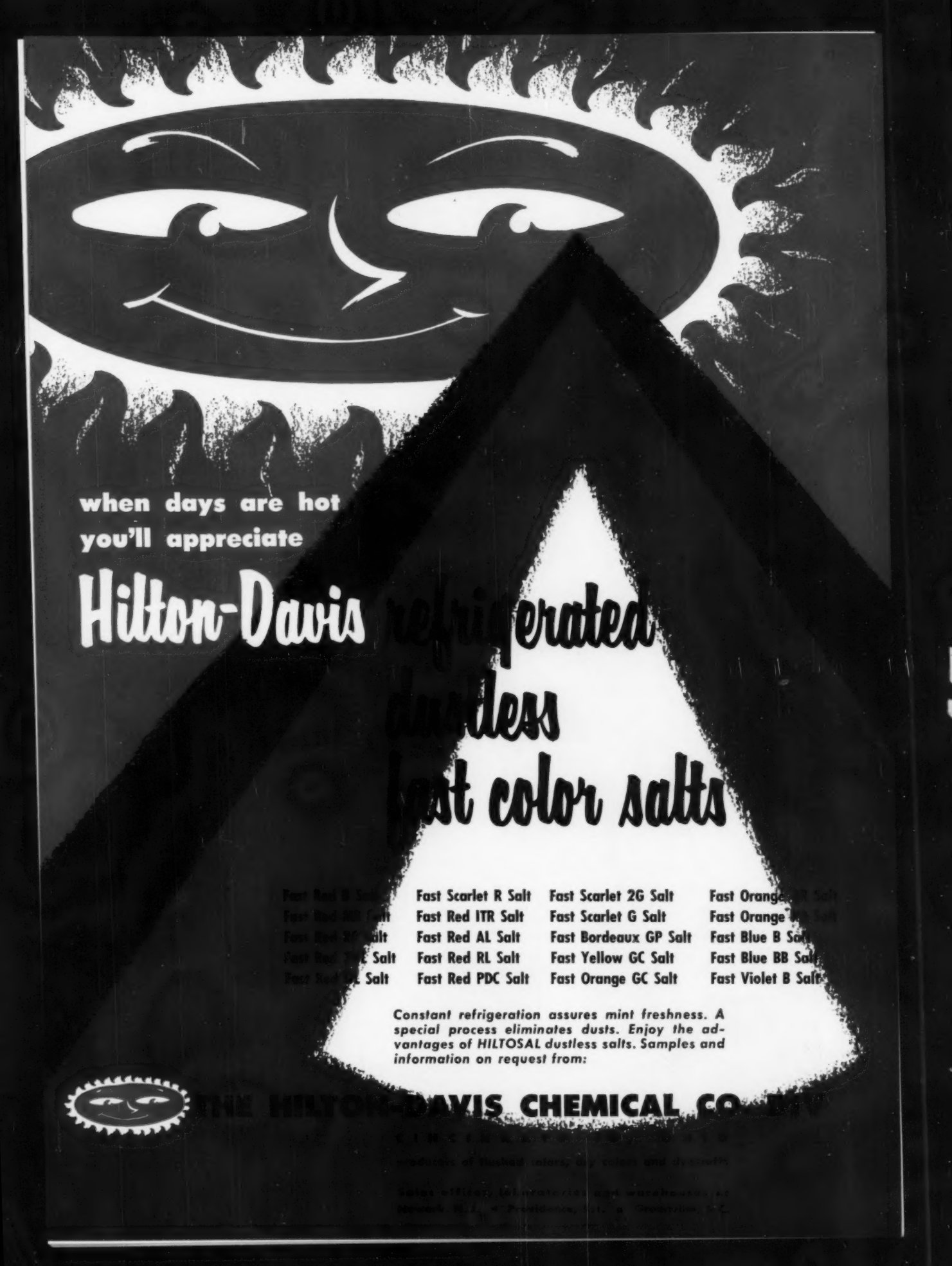
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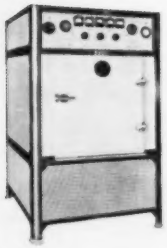

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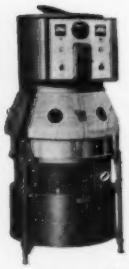

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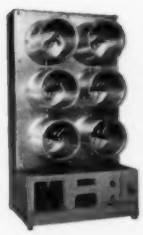

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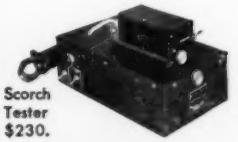

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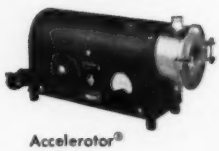

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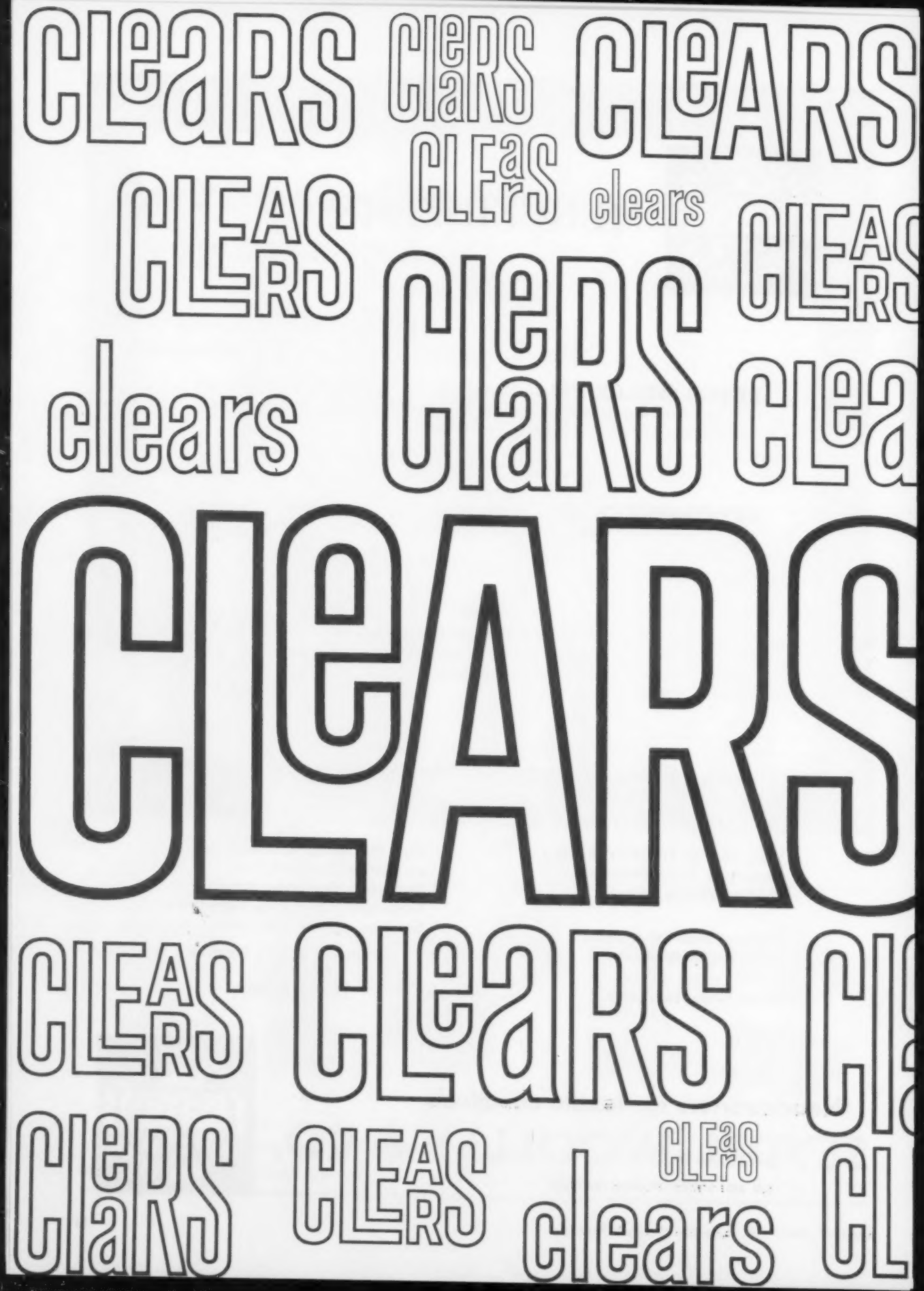
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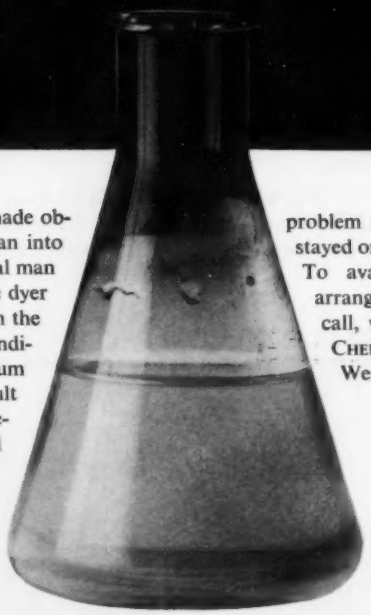

A dyehouse accepted an order calling for a shade obtainable only with a very sensitive dye and ran into trouble. We got an SOS. A "Virginia" technical man was sent around to see what he could do. The dyer was using test papers and titration to check on the potential of the bath. Under-reduction was indicated, so the dyer was increasing the sodium hydro and getting over-reduction. The end-result was either crocking or dull shades. Our troubleshooter put his Redox recorder to work and found that the hard-to-handle dye stayed effectively soluble in approximately a 25 millivolt range. A new bath was prepared. By taking millivolt readings every 15 minutes, the exact proportions of hydro and caustic were finally established. To make sure the problem really had been solved, the "Virginia" man stayed on the job until the entire order was completed. To avail yourself of our technical service—or arrange for a free mill trial of "Virginia" hydro—call, wire or write: Chemical Division, VIRGINIA CHEMICALS & SMELTING COMPANY, Dept. 614, West Norfolk, Virginia.

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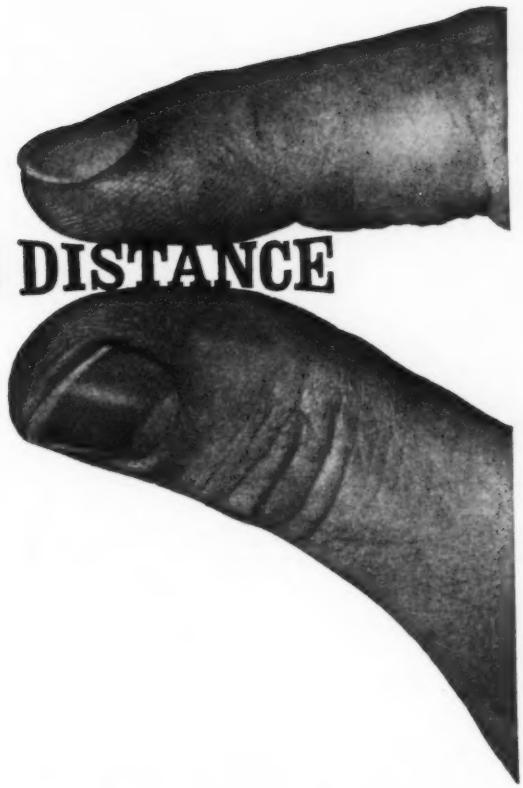

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IMPROVEMENT OF LIGHTFASTNESS OF DYEINGS ON SYNTHETIC FIBERS BY ULTRAVIOLET ABSORBERS
Part I

A F STROBEL

Antara Chemicals

A division of General Aniline & Film Corporation

The fastness to light of well-leveling dyes on nylon, Dacron, and Orlon is said to be distinctly improved by co-dyeing with a new ultraviolet light absorber now under development by the Antara Chemicals division of General Aniline & Film Corporation.

On nylon and Dacron, commercially available UV light absorbers, such as Uvinul D-49 (GAF), definitely improve the lightfastness of well-leveling colors.

The carbon-arc light was used in these accelerated tests, although refinements may be expected in the future by application of the Xenon lamp (*6,7*).

Dyeing affinity, application techniques, and stability of the ultraviolet absorbers applied alone on Dacron, nylon, and Orlon have been determined.

INTRODUCTION

THE dyeing of nylon 66 with Celliton or other disperse colors produces very level shades with moderate lightfastness. Basic colors of the Genacryl type on Dacron 64 build full shades with very good levelness and fair lightfastness, whereas this lightfastness is generally good on Orlon. It became of interest to learn whether such dyeings could be improved in lightfastness by treating the fiber in some manner with ultraviolet light absorbers.

Radiation from the sun received at the earth's surface at sea level contains an ultraviolet portion of wave length 300-400 mμ, which is about 5% of the total radiation received. About 50% of the sun's radiation is in the visible spectrum from 400 to 750 mμ (*1*). Solar radiation shorter than 300 mμ is screened out by the earth's atmosphere.

In the field of plastics stabilizers, in many cases the most harmful radiation is that from 300 to 350 mμ, which we shall define as the "far-UV" in this paper. As examples, in polyester plastics, the 325 mμ region is the area of maximum sensitivity (*2*); in cellulosic nitrate, 310 mμ radiation is most responsible for development of yellow color (*1*). In polypropylene, polyurethane, and polyvinyl chloride products (*3*), the 330 to 370 mμ region is most responsible for degradation. The yellow color of varnish is destroyed principally by "near-UV" radiation, which we shall define as radiation with wave lengths 350 to 400 mμ (*2*). The 5% UV component of the sun's radiation does far more damage to organic matter than its percentage proportion would suggest (*4*).

A variety of ultraviolet light-absorbing compounds are now available which have absorption maxima lying anywhere from 320 mμ to 350 mμ. In addition, research into new types of lightfast absorbers has proceeded at a rapid rate, so that today ultraviolet absorbers derived from 2-hydroxy benzophenone and hydroxybenzotriazole, as well as substituted acrylonitrile derivatives, are being offered. Table I summarizes some of these.

The first experiments designed to evaluate the effectiveness of UV absorbers in stabilizing colorings employed a filter consisting of 5% Uvinul D-49 in a cellulose acetate sheet three mils thick (*5*). This UV filtering or absorbing screen effectively blocked out the entire UV radiation. It was placed over part of a dyeing in the Fade-Ometer beside a blank cellulose acetate screen, and a comparison was made of fading with and without the absorbing sheet. The results of this work suggested that yellows were most sensitive to UV, reds next, and blues least sensitive. Fugitive colors could be better protected by UV absorbers than could lightfast colors (*5*).

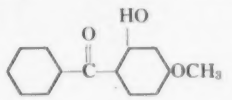
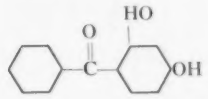
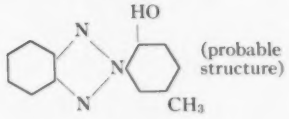
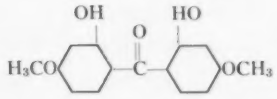
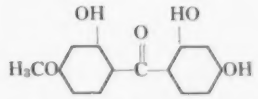
With the conclusion that many shades of yellow, red, and even blue and green could be improved in lightfastness by absorbing the entire UV component from incident radiation, it became of interest to determine if possible which region of UV is most responsible for the degradation of colorings. The question arose as to whether far-UV absorbers, such as Uvinul M-40, had stabilizing power for dyestuff comparable to that exhibited by compounds which absorb also near-UV light, such as Uvinul D-49. A group of five absorbers with varying absorption maxima were compared. The near-UV absorbers proved to be more effective than the far-UV ones in stabilizing colorings in almost all cases, as will be seen from the data which follows.

EXPERIMENTAL

APPLICATION OF UV ABSORBERS——One important problem which had to be solved in the practical application of UV absorbers for the stabilization of colorings on fibers was to develop a suitable method of applying the absorber itself. The possibilities offered on synthetic fibers include:

a) dissolving the absorber in the fiber in a molten or solution state (this method would distribute the

TABLE I
UV absorption in alcohol solution

Uvinul M-40 (GAF) Cyasorb 9 (Am Cyan)		K max = 40 at 325 mμ
Uvinul 400 (GAF)		K max = 40 at 325 mμ
Tinuvin P (Geigy)	 (probable structure)	K max = 65 at 330 mμ
Uvinul D-49 (GAF)		K max = 50 at 345 mμ
Uvinul 490 (GAF)		K max = 50 at 348 mμ
Uvinul N-35 (GAF)	a substituted acrylonitrile	K max = 43 at 303 mμ
Uvinul N-38 (GAF)	a substituted acrylonitrile	K max = 65 at 319 mμ

absorber uniformly throughout the fiber, whereas it should preferably be concentrated near the fiber surface);

b) padding the absorber on the cloth from aqueous or organic solvent;

c) applying the absorber by a predyeing, co-dyeing, or after-dyeing operation;

d) spray-coating either from organic solution or dispersion, or from aqueous dispersion.

Application of the absorber by co-dyeing it at the same time as the dyestuff is applied is the most practical method, since no additional operation is required. The most satisfactory co-dyeing method which we have found for each of the fibers, nylon 66, Dacron 64, and Orlon 42, is given below. Exhaustion of the absorbers runs about 50% at 0.25% concentration of absorber by these optimum co-dyeing methods; thus, the absorbers are not nearly as substantive as many dyes. The co-dyeing method of application also fixes the absorber to the fiber so that it is faster to washing (AATCC Wash Test No. 2) than when applied by any of the other methods mentioned above.

1) *Nylon 66.* A nylon filament taffeta—Type 200, Test Fabrics #302A—was used in the first tests. The liquor ratio was 40:1 (dyebath to nylon) with additions of 1.0% Igepon T-51 and 4% sodium sulfate, owf. A mechanical stainless-steel agitator to which the cloth was attached was employed. A 1% acetone solution containing 0.25% absorber, owf, was added. The bath was brought to the boil and run at 200° to 210°F for one hour with agitation. The dyed cloth was removed, rinsed, and dried. All lightfastness tests were carried out in the Fade-Ometer. All wash testing used AATCC Test No. 2.

2) *Dacron 64.* A spun challis—Test Fabrics #758—was used. The bath had a liquor/cloth ratio of 40:1, with additions of 4% sodium sulfate and 0.5% Emulphor ON-870, owf. A mechanical stainless-steel agitator again was employed. Again the 0.25% dye and 0.25% absorber was dissolved in 100 times as much acetone and added to the dyebath. The bath was brought to the boil and kept near the boil for one hour with agitation of the attached Dacron swatch, after which the cloth was removed, rinsed, and dried.

3) *Orlon 42.* A spun challis—Type 42, Style 855A—was used. A liquor ratio of 30:1, with 16% sodium diacetate and 10% sodium sulfate, owf, stainless-steel agitator with Orlon attached, was employed. The cloth was dyed near the boil for one hour with agitation after which it was removed, rinsed, and dried.

COMPARATIVE RESULTS IN LIGHTFASTNESS ——A group of five UV absorbers covering the UV range from 300 to 400 mμ was selected for a study of dyeing affinity, exhaustion, and relative ability to protect dyeings from light fading on the three synthetic fibers, nylon, Dacron, and Orlon. Absorption (methanol) curves of the five products are given in Figure 1.

Absorbers A, C, and E are new substituted acrylonitrile compounds synthesized at the Rensselaer (New York) laboratories of General Aniline & Film Corp as part of a general program on UV absorbers for synthetic fibers. The substituents on the acrylonitrile have been varied to give the range of absorption curves shown in Figure 1. Absorbers B and D are Uvinul D-49 and Uvinul M-40, respectively.

Results of light tests of 20 hours Fade-Ometer exposure of a group of level-dyeing dyes applied to nylon, Dacron, and Orlon by the above co-dyeing methods using 0.25% dye and 0.25% of each of the above absorbers, in turn, are given in Tables II, III, IV.

Absorber A is somewhat better than Absorber B on Dacron 64 with the above three dyeings, and both absorbers give considerable improvement in lightfastness over the blank.

Compound B is no better than blank on Orlon in

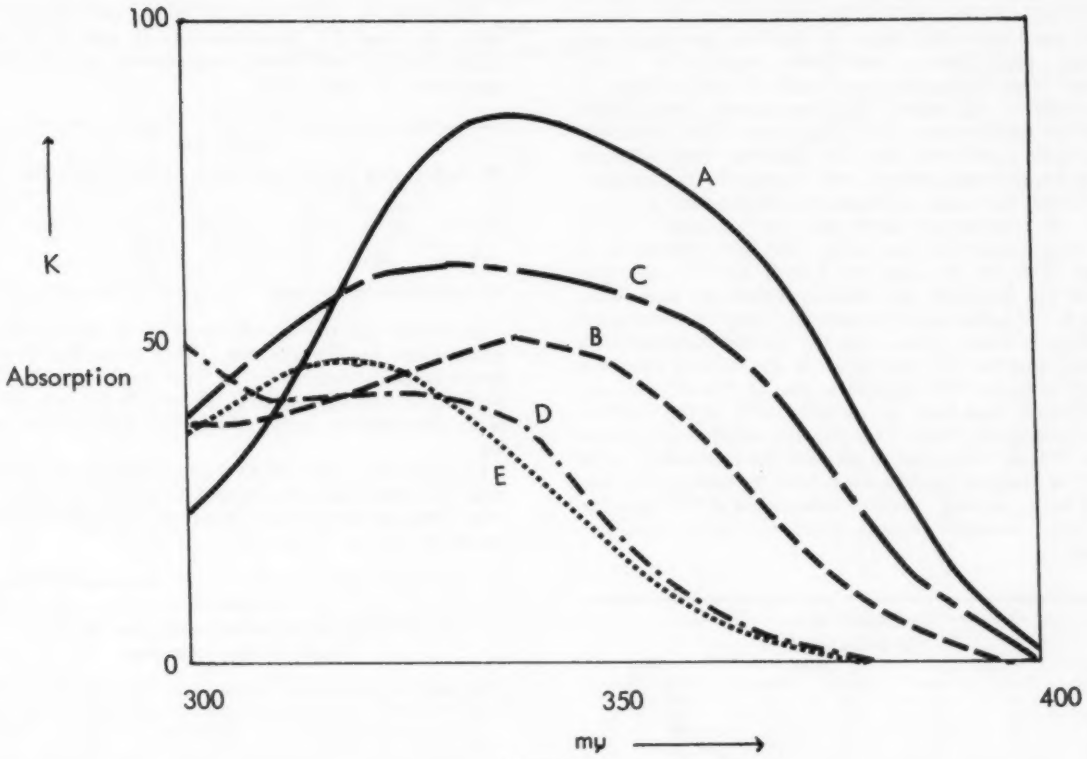


Figure 1

two cases (CI Basic Red 13 and Genacryl Blue 3G), while only slightly better than blank with CI Basic Yellow 13. On the other hand Compound A definitely improves the lightfastness in all three cases on Orlon. Thus, comparing Table V with Table III, the effect of increasing concentration of dye to 1% while keeping the absorber strength at 0.25% is to reduce the relative effectiveness of the absorber. On application of 7% Celliton Fast Black BA and 0.25% of Absorbers A to E, respectively, to nylon, no visible improvement in lightfastness after 20 Fade-Ometer hours was obtained.

Dyeing of nylon with 0.25% dye by the application method described above gave unlevel dyeings with the following: CI Acid Red 73, CI Acid Red 33, Genalan Yellow GG, Genalan Brilliant Blue B, CI Direct Orange 1, CI Direct Yellow 26, CI Acid Blue 113, and Supralan Blue NB. These dyes in most cases show a distinct barré effect on nylon 66. Co-dyeing with 0.25% of the five UV absorbers in turn gave little or no improvement in lightfastness with these dyes. Apparently level dyeing or penetration of the fiber by the dye is a prerequisite to obtaining improved lightfastness on nylon by the use of near-UV aborbers (9).

TABLE II

Level-dyeing dyes on nylon 66; % loss on light fading (20 hrs Fade-Ometer) 0.25% dye and 0.25% UV absorber, owf**

Dyestuff	*Blank**	*Absorbers* A	B	C	D	E
0.25% CI Disperse Blue 3	30%	15%	15%	22%	30%	40%
" CI Disperse Orange 3	60%	30%	40%	35%	55%	50%
" CI Disperse Blue 7	40%	10%	18%	15%	30%	35%
" CI Disperse Red 1	75%	35%	45%	50%	60%	60%
" Genalan Yellow 2G	75%	40%	60%	30%	60%	35%
" CI Acid Yellow 40	50%	30%	25%	20%	50%	40%

*"Blank" here refers to a dyeing using 0.25% dye and no absorber.
**All percentage fadings of colors were visually estimated in north light and therefore are to be taken as relative only.
All Fade-Ometer exposures were made at the same elevation with respect to the arc (*8*).

TABLE III

Level-dyeing dyes on Dacron 64; % loss on light fading (20 hrs Fade-Ometer) 0.25% dye and 0.25% absorber, owf**

Dyestuff	*Blank**	*Absorbers* A	B	C	D	E
0.25% CI Basic Yellow 13	30%	10%	15%	10%	25%	25%
" CI Basic Red 13	80%	30%	40%	30%	60%	70%
" Genacryl Blue 3G	30%	5%	10%	12%	20%	20%

*"Blank" here refers to a dyeing using 0.25% dye and no absorber.
**All percentage fadings of colors were visually estimated in north light and therefore are to be taken as relative only.
All Fade-Ometer exposures were made at the same elevation with respect to the arc (*8*).

TABLE IV

Level-dyeing dyes on Orlon 42; % loss on light fading (20 hrs Fade-Ometer) 0.25% dye and 0.25% absorber**

Dyestuff	*Blank**	*Absorbers* A	B	C	D	E
0.25% CI Basic Yellow 13	20%**	11%	15%	20%	10%	15%
" CI Basic Red 13	20%	12%	30%	12%	30%	25%
" Genacryl Blue 3G	20%	8%	18%	10%	20%	15%

*"Blank" here refers to a dyeing using 0.25% dye and no absorber.
**All percentage fadings of colors were visually estimated in north light and therefore are to be taken as relative only.
All Fade-Ometer exposures were made at the same elevation with respect to the arc (*8*).

TABLE V

Level-dyeing dyes on Dacron 64; % loss on light fading (20 hrs Fade-Ometer) 1% dye and 0.25% absorber**

Dyestuff	*Blank†*	*Absorbers* A	B	C	D	E
1% CI Basic Yellow 13	15%**	3%	5%	5%	10%	10%
" CI Basic Red 13	80%	40%	40%	45%	80%	80%
" Genacryl Blue 3G	40%	20%	25%	30%	40%	40%

†"Blank" here refers to a dyeing with 1% dye and no absorber.
**All percentage fading of colors was visually estimated in north light and therefore these data are to be taken as relative only.

APPLICATION EFFECTIVENESS——To determine how efficiently each of the five absorbers was dyeing nylon, Dacron, and Orlon respectively, applications of each absorber were made to undyed fiber by the "dyeing" technique described above using 0.25% absorber (without any dye), also using 0.50% absorber. The cloth dyed with the UV absorber was removed from the dyebath, rinsed, and dried. To the dyebath containing the exhaust liquor was then added a second piece of (untreated) cloth and an "exhaust" dyeing was made, again for one hour. The UV reflectance of blank cloth, of the cloth dyed with the UV absorber, and of the dyeing of the exhaust liquor was then made using a UV reflectance photometer. The UV reflectance of white Carrara glass was set to 100 galvanometer reading and the UV reflectance of the various swatches "dyed" with the UV absorbers, also of "blank" (ie. undyed) cloth, was read as fractions or % of the Carrara glass reflectance. Table VI shows the relative reflectance of the "blank" cloth compared with the cloths dyed with 0.25% of each of the five absorbers, as well as the exhaust liquor dyeing. (Lower reflectance of UV light for the same absorber means relatively more absorber present.)

TABLE VI
% Reflectance

0.25% Absorber	Dacron		Nylon		Orlon	
	Dyeing	Exhaust	Dyeing	Exhaust	Dyeing	Exhaust
A	26	36	27	32	36	37
B	26	38	31	38	41	47
C	28	39	27	36	36	42
D	39	51	52	55	54	56
E	49	56	56	56	58	58
Blank	60		59		62	

It is seen from the data in Table VI that A and B are the strongest UV absorbers on Dacron, and that A and C are superior in absorbing power on nylon. On Orlon all absorbers are seen to be less efficient than on nylon or Dacron, but A and C have the most affinity for Orlon.

A comparison of dyeings of Absorbers A, B, and C at 0.25% and 0.50% on Dacron 64 and nylon 66 is given in Table VII.

TABLE VII
% Reflectance

Absorber	Dacron		Nylon	
	0.25% owf	0.50% owf	0.25% owf	0.50% owf
A	26	23	27	24
B	26	22	31	26
C	28	24	27	23
Blank	60		59	

It is seen from Table VII that increasing the absorber concentration in the dyebath from 0.25% to 0.50%, owf, does not change the UV absorption of the swatch appreciably after dyeing on either nylon or Dacron. For this reason 0.25% absorber, owf, was used in most of the experimental work.

An examination of the treated swatches in ultraviolet light showed that Compound B imparts a strong yellow fluorescence to nylon but has no fluorescence on Dacron or Orlon. A and C give essentially no fluorescence to either fiber. The exhaust dyeing column in Table VI shows that for each absorber on each fiber considerable absorber remained behind in the dyebath in the first dyeing, 50% of the remainder was exhausted in the second dyeing from the same bath, and so on.

Absorber D (Uvinul M-40) is seen to be much more effective in dyeing Dacron than it is in dyeing nylon or Orlon, also its exhaust is seen to be rather complete.

Washfastness tests were carried out on swatches dyed with the near-UV Absorbers A, B, and C on white nylon, Dacron, and Orlon, respectively; and the results are given in Table VIII.

TABLE VIII
% Reflectance before and after AATCC Wash Test No. 2

Absorber	Dacron		Nylon		Orlon	
	Before washing	After washing	Before washing	After washing	Before washing	After washing
A	26	27	26	31	35	36
B	26	27	31	37	40	40
C	27	27	27	31	36	37

It is seen that the washfastness of all three absorbers is excellent on Dacron and Orlon; Absorber C shows better washfastness on nylon than does A or B. Nylon cloth dyed with Absorber B (Uvinul D-49) retains most of its fluorescence (observed in UV light) after washing.

Lightfastness tests (24 hr Fade-Ometer) on the three near-UV Absorbers A, B, and C on white nylon and white Dacron showed no change in absorption after 24 hours, as seen in Table IX.

TABLE IX
% Reflectance before and after 24 hrs Fade-Ometer exposure

% Absorber	Nylon		Dacron	
	Before exp	After exp	Before exp	After exp
A	27	27	26	26
B	30	30	26	26
C	28	28	27	27
Blank	59		60	

The nylon itself has a faint yellow fluorescence which fades quickly in UV light in the absence of UV absorbers. This fading is especially retarded by the use of Compounds A and C.

Since Compound B (Uvinul D-49) gave only 50% exhaustion, structural variations were synthesized and evaluated in dyebath application (Table X).

It is seen that little increase in affinity (on a weight basis) is obtained in going from Absorber B to the homologous derivatives cited. The absorption of the above absorbers is approximately proportional to their molecular weights. Uvinul 490 imparts a strong yellow color to the cloth with consequently considerable change in shade. Further work is in progress attempting to effect improved dyeing with these Uvinul D-49 modifications, which will be reported at a later date.

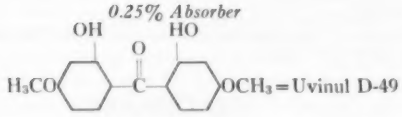
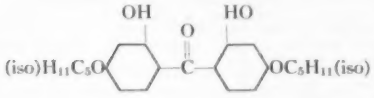
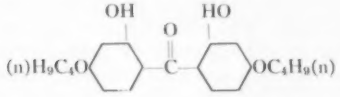
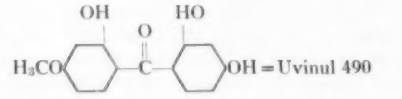
APPLICATION METHODS COMPARISON——Besides dyeing, other methods of applying absorbers to fibers were investigated:

1) Spray coating of a 1% acetone solution of Uvinul D-49 gave distinct improvement of lightfastness to red, yellow, and blue dyeings on Dacron 64. The method, however, appears impractical and difficult to reproduce. No further work has been done to determine penetration, levelness, or washfastness of UV absorbers applied by this method.

2) Padding methods were tried wherein a 0.50% solution of Absorber A in carbon tetrachloride was prepared. This particular solvent could be padded on Dacron without loss of color. The lightfastness of a 0.25% dyeing of CI Basic Violet 10 on Dacron 54 and of a 0.25% dyeing of CI Disperse Yellow 3 on Dacron 54 was found to be improved by using this padding method, compared with lightfastness obtained by the co-dyeing method of applying the absorber. It was found, however, that washfastness of the absorber ap-

TABLE X

Structural variations of Absorber B (Uvinul D-49)*

0.25% Absorber	Dacron		Nylon	
	0.25% Dyeing	Exhaust	0.25% Dyeing	Exhaust
	26	34	31	34
	28	36	41	41
	27	35	27	46
	33	36	29	33
Blank	59		58	

* 0.5% Emulphor ON-870, owf, (a polyethylated fatty alcohol) was added to the bath in each of the dyeings in Table X.

plied by the CCl_4 solution-padding technique was distinctly inferior to the washfastness of the absorber applied by the dyeing technique described under "Application of UV Absorbers" earlier in this section.

Padding of aqueous dispersions of UV absorbers using Blancol (a naphthalene sulfonic acid-formaldehyde condensate) as dispersing agent gave poor lightfastness due to the browning of the dipersant itself in the Fade-Ometer.

3) Variation of aqueous dyeing using Peregal ST (a (pyrrolidone derivative) and a number of Igepal surfactants, as well as pH variations of the dyebath, produced dyeings inferior to the co-dyeing methods described under "Application of UV Absorbers". The use of carriers such as Tanavol (a modified self-emulsifiable solvent carrier), benzanilide, etc, produced stronger dyeings in aqueous applications, but lightfastness tests with carriers present along with the dye absorber were very poor. It was necessary to sublime off the carriers to get satisfactory lightfastness using carriers in conjunction with dye absorber.

A co-dyeing of 0.25% CI Basic Violet 10 by the technique described under "Application of UV Absorbers" gave fair leveling. Co-dyeings made with 0.25% of Absorbers A and B, Tinuvin P, and the brightener Blancophor PE-79 (GAF, K max = 155 at 362 mμ) are compared in Table XI.

TABLE XI

% Loss after 20 hrs Fade-Ometer exposure

0.25% Dye	Blank	A	B	Tinuvin P	Blancophor PE-79
CI Basic Violet 10	85%	40%	45%	60%	95%

It is seen that Tinuvin P (with absorption maximum at 332 mμ) is not so effective an absorber as Compound A or B with absorption maxima at 345 to 350 mμ. The brightener Blancophor PE-79 acts as a sensitizer.

It appears that strong absorption of UV light by the coloring in the region from 300 to 400 mμ is not a prerequisite for effective stabilization of the coloring by an absorber. Thus CI Disperse Blue 3 is stabilized by

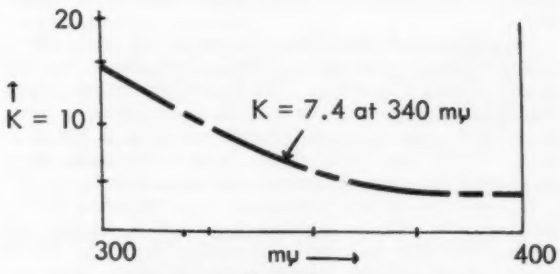


Figure 2

UV absorption curve for CI Disperse Blue 3

essentially colorless near-UV absorbers. The UV absorption curve of CI Disperse Blue 3 is given in Figure 2.

It is seen that CI Disperse Blue 3 has only moderate absorption in ultraviolet light. Again CI Disperse Orange 3 has an absorption minimum in UV at 340 mμ. Also CI Disperse Yellow 3 has a maximum absorption at 350 mμ. All three of these dyeings are stabilized by UV absorbers when dyed on a substrate where they have given level shades. Of course all of these dyes have some absorption in the ultraviolet. The UV absorber acts merely by absorbing or screening out UV energy and dissipating the energy as heat. The UV light catalyzes chemical reaction by formation of radicals either from the substrate, from oxygen dissolved in the substrate, or from the dye molecules themselves. The mechanism of stabilization in the case of CI Disperse Blue 3, which absorbs relatively little UV, appears to be prevention by the absorber of a UV light-catalyzed oxidation of the aromatic amino group of the dye molecule (*10*). In the case of yellow and orange dyes which absorb UV light strongly, the absorber competes with the yellow dye as a UV absorber and reduces excitation of the dye molecule by UV light absorption.

Further work is in progress on the behavior of UV absorbers.

A second paper on this work is in preparation by the author, and it is to be presented at the AATCC National Convention at Buffalo, NY, September 27-29, 1961.

ACKNOWLEDGMENT

The experiments described above are the results of a team effort on the part of S C Catino, R Rounds, and the author, at the Rensselaer, NY, laboratories of General Aniline & Film Corp.

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TRADEMARKS

The following tradenames have been used in this paper:
Dacron—E I duPont de Nemours & Co, Inc
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Uvinul—General Aniline & Film Corp
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Celliton—General Dyestuff Co
Cyasorb—American Cyanamid Co
Tinuvin—Geigy Chemical Corp
Fade-Ometer—Atlas Electric Devices Co
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ADR ABSTRACTS

Better Way to Mix Reactive Dyes

Anon, *Textile World 111*, 84, 86, June, 1961

The author describes a method employed by Pontiac Div of Fruit of the Loom, Inc, in applying cold-type reactive dyes to cotton cloth continuously on the padder.

He points out that the dye liquor of most fiber-reactive dyes, when mixed with alkali, has a use-life of only 10 to 15 minutes. The longer the mixed liquor stands, the greater is the loss in color. This is why, up to now, the dyer using these products has had to make short runs with small batches of cloth, thus increasing the cost of dyeing, the author says.

A new dye-mixing apparatus, the "Horsfall Unit", developed by ICI, is employed by Pontiac. In this apparatus the dye solution is combined with the alkali solution, one gallon at a time, in the ratio of seven parts by volume of dye to one of alkali. During the padding, whenever the level of liquor in the dye-box gets low, automatically a fresh gallon of the dye-alkali mixture is made and run into the box, thus ensuring a continuous flow of freshly mixed dye solution.

For dyeing shades requiring over 2 percent of dye, Pontiac uses sodium metasilicate for the alkali solution; for shades of under 2% of dye, soda ash is preferred. The amount of alkali used is equal to the amount of dye (with a minimum of 0.65 oz of soda ash per gallon of dye liquor in dyeing light shades).

After padding, Pontiac allows the goods to hang on a rack for a minimum of two hours, to fix the color. The cloth is then washed on a rope soaper and dried on steam cans.

It is claimed that when this method of dye-mixing is used the dye goes on more evenly and shade matching is easier.

•

The Variables in Hydrogen Peroxide Bleaching of Cotton

Martin, H L, *Can Textile J 78*, 42-4, May 12, 1961

Cotton is bleached as raw stock, yarn, woven goods or knitted fabrics. Each requires special equipment, but in general the conditions necessary for good bleaching results are identical. Some of the variables regularly encountered in a bleachery are the following:

1) *Gray Goods* may contain tar spots, metallic salts, colored dye fly, or all three. A specific pretreatment is then needed.

2) *Water Supply* may require softening treatment.

3) *Steam Supply:* requirements vary considerably with the type of equipment used. Conditioned low-velocity steam is needed in continuous bleaching systems.

4) *Equipment:* stainless steel or specially prepared equipment is required for peroxide bleaching, which may use open tanks, becks, package machines, kiers, or continuous ranges.

5) *Chemicals* may include wetting agents, sodium silicate, caustic soda, soda ash and other alkalis, and chelating agents.

6) *Time and Temperature:* the bleach cycle may vary from 10 minutes up to 14 hours with temperatures from 80°F up to 260°F, depending on the type of equipment.

7) *pH* is interrelated with time and temperature, and varies from 10.0 to 11.0.

8) *Human Factor:* this must also be included.

The following are possible causes for unbleached areas in bleached cotton goods:

1) Dead cotton woven into the fabric.

2) Impurities in the water, catalyzing peroxide decomposition.

3) (in continuous bleaching) Superheated steam (causing fabric to dry out) or wet steam (diluting the chemicals).

4) Variations in the amount of chemicals on the cloth (in continuous bleaching), due to irregular squeezing between saturator and J-box; insufficient circulation of the liquor (in kier bleaching).

5) Insufficient wetting-out of material; low alkalinity and pH.

6) Too short time and too low temperature.

The author points out that from the practical point of view it should be remembered that any mill bleach problem, such as unbleached spots or dye resist marks, probably is not the result of just one factor, but more likely is a combination of many.

He also discusses some of the most recent developments in peroxide bleaching processes, including a rapid bleach for heavy-weight, tightly-woven cotton fabrics consisting of a 2-stage open-width continuous system, and a single-stage pressure-kier bleaching system developed specifically for increasing production. An improved J-box is also described.

The Fastness of Dyed Textiles to Pleating Processes

Hadfield, H R, *Can Textile J 78*, 52, 55-8, 61-2, Mar 17, 1961

The introduction of hydrophobic synthetic fibers and of new resin finishes for cellulosic fibers has resulted in a demand for dyed materials possessing high colorfastness to pleating and setting processes. In the case of natural fiber fabrics, steaming treatments are usually employed to produce pleated effects. Although steam-setting treatments were also utilized in the early period of development of synthetic fibers, now dry-heat setting is mainly used.

The steaming processes normally affect the color of a textile material by migration of color in an aqueous phase from dyed fibers to undyed fibers, or by including a chemical reaction that changes the color of a dye. The dry-heat processes, which are given for a much shorter time at a much higher temperature, generally affect the color as a result of sublimation of dye.

Since the two processes can affect the shade of a dyed textile by two distinctly different mechanisms, the problem of measuring colorfastness of dyed textiles to pleating or setting processes must be considered as two distinctly different exercises: one dealing with steaming treatments and the other with dry-heat treatments.

In addition to measuring the change of shade of the colored material, it is also sometimes necessary to measure the degree of staining on adjacent undyed fibers.

Steam setting is carried out by wrapping the fabric over a perforated roller and then, in an autoclave, blowing steam though the roll of fabric. Yarn may also be steam-set in cheeses.

To imitate the steam-pleating process in the laboratory, the Heat-treatment Subcommittee of the S D C has designed a simple apparatus, which has several interesting features that are described. A full description will be found in "Standard Methods for the Determination of the Colour Fastness of Textiles," 2nd edition, published by S D C. The test specifies three conditions of steaming: mild, intermediate, and severe. Variation in the moisture content of materials is the largest cause of nonreproducible results when testing fastness to steam pleating and setting, and the Society's test has been devised with this in mind.

Dry-heat setting of hydrophobic fabrics is carried out either by contact heating with a metal surface or by hot gases. Normally, dry-heat pleating is carried out by contact with a hot surface. The heating time in both processes is usually short (less than a minute), and the temperature is normally higher than 150°C.

The S D C test to imitate dry-heat pleating employs a heated molten-metal surface for conducting heat to the patterns being tested. The alloy used melts at approximately 71°C. The fabric is immersed in it for 30 seconds at 150°C (mild), 180°C (intermediate), and 210°C (severe), in an apparatus which is described.

The application of these tests is discussed by the author in much detail.

•

Changes in the Physical Properties of Cotton on Cross-linking

Steiger, F H, Wang, S Y and Hurwitz, M D, *Textile Research J 31*, 327-39, April 1961

Formaldehyde has long been of interest as a cellulose reactant; it was used a half-century ago to improve the wet strength of regenerated cellulose fibers.

Though formaldehyde is a cheap, efficient, nonnitrogenous cellulose cross-linker, it has not found commercial success as a durable chlorine-resistant finish for cotton. Three reasons for its restricted use in this application are usually given: the odor of the reagent, the variability of the results, and the excessive loss of fabric strength. To date, the problem of strength loss has proved to be virtually insurmountable in commercially accepted processes, the authors say.

The poor crease recovery/strength relationship exhibited by cotton which has been reacted with formaldehyde by a dry curing process is shown to be primarily a function of the formal linkage, and not of the degradative effects of acid.

Turning to the application of dialdehydes, the authors point out that cotton in the wet state (not cured) can be cross-linked by means of hemiacetal linkages with glyoxal, and that the strength loss produced by cured dimethylolethyleneurea at a given level of crease recovery is comparable to that obtained from uncured glyoxal in the absence of those degradative effects associated with the hot, acidic curing of thermosetting finishes.

The ratio of wet to dry crease recovery suggests that the areas of cellulose and/or the hydroxyl groups which are involved when cotton is cross-linked in glyoxal solutions are the same as those involved in the dry curing of cross-linkers. A high wet to dry crease-recovery ratio evidently requires that cross-linking at some stage take place in a state of swelling beyond that found during the application of typical aqueous cotton crease-proofing reagents.

The thesis that different areas and/or hydroxyl groups are involved in the attainment of wet and dry crease recovery is further supported by experiments in which dry crease recovery was obtained on cotton independently of the high wet crease recovery which had been established first.

Fifteen references to the literature are cited.

•

Properties of Cotton Fabrics Treated with Fluorocarbon Combinations with Water Repellents

Goldstein, H B, *Textile Research J 31*, 377-87, April 1961

For over 30 years, water repellents have been applied commercially to textiles to provide protection from the weather and to impart resistance to water-borne stains. But, aside from the application of impervious coatings, little success was found in the development of finishes for textiles which would improve their resistance towards oil-borne stains. It was not until the early 1950s that significant progress was made on this problem of oily-soil resistance.

The present paper shows some of the effects which can be obtained on cotton in increasing its resistance to oil-borne stains through the combined use of a fluorochemical textile finish and conventional water-repellent products.

The fluorocarbon finish used in this project was Minnesota Mining and Manufacturing Co's "Textile Chemical FC-208", consisting of an emulsion of a perfluoro resinous compound in a water-acetone solvent and containing approximately 28% solids.

The types of water repellents included in this study were quaternaries, stearamide-resin dispersions, silicones, aluminum salt-wax emulsions, zirconium salt-wax emulsions, and a cationic thermosetting compound.

The effects studied, for which data are presented, include dynamic absorbency, spray ratings, soil resistance, whiteness, and mildew resistance. The properties obtained were also evaluated for their resistance to laundering, drycleaning, weathering, and abrasion.

The use of fluorochemical in combination with water repellent results in a finish which is very much more resistant to washing, drycleaning and abrasion than that obtained when the products are used alone, the author states.

A combination of fluorochemical and quaternary-type water repellent is said to impart a fairly high level of rot resistance to cotton.

When white cloth is to be treated, combinations of fluorochemical and water repellent are available which will cause little or no yellowing.

The author states that the beneficial effects of the "Quarpel" finish developed by the QMC for rainwear (see *ADR 50*, 334, 1960) may be obtained at significantly lower cost by using approximately 5% of fluorochemical plus 16% of quaternary water repellent.

Twenty references to the literature are cited.

•

Solvent-assisted Dyeing of Wool

Kaerrholm, E M, *J Textile Inst 51*, T1323-40, Dec, 1960

This paper describes an investigation of the influence of various factors on the dyeing rate of wool in the presence of alcohols or amines. The factors studied are the amount of absorption of some alcohols on wool, the acidity of the dyebath, the partition ratio for a dye between a solvent and buffer solution at high bath ratios, and various surface treatments.

Preliminary experiments showed that alcohols were selectively absorbed from aqueous solutions by wool. In order to measure the amount of absorption, an apparatus was designed at the Swedish Textile Research Institute. This apparatus, which is described, was used for dyeing experiments as well, thus making it possible to determine the absorption of alcohol and of dyes from the same experiment.

The main difficulty in investigating the influence of absorption of an alcohol on the rate of dyeing is to find a suitable dye, the author states. Dyes are affected to different degrees by alcohols, ie, depending on the degree of sulfonation of the dye. However, Bromphenol Blue, tetrabromphenol sulfonphthalein (an indicator dye not normally used for wool dyeing) has affinity for wool, is monomolecular in solution, and its dyeing rate is influenced by alcohols. It was the principal dye used by the author in her experiments.

The author demonstrates that the solvent is actually absorbed by the wool, and that this absorption is one necessary condition for obtaining an increased dyeing rate; for benzyl alcohol, the dyeing rate is a rectilinear function of the amount of absorption, for the dye used. By applying an indicator dye, acting as an indicator acid, it has been possible to show that an increase in dyeing rate of the acid form can be obtained with alcohols, while an increase in dyeing rate of the basic form is obtained only with amines (eg, hexylamine).

The partition ratio of the two forms of the indicator between buffer solutions and alcohols or amines at *high liquor ratios* (200:1 to 400:1) has been determined and related to the dyeing rates, resulting in a hypothesis for the mechanism of solvent-assisted dyeing of wool.

The author points out that the partition ratio for the dye between solvent and dye solution must be high, in order to obtain an appreciable increase in dyeing rate.

Solvent-assisted dyeings on wool, resulting in increaed rate of dyeing, performed with many dyes in the author's laboratory, have always given a more uniform distribution of dye between different wool fibers in the initial periods of dyeing than is obtained in the absence of solvent, she says.

Sixteen references to the literature are cited.

CORRECTION

AN error in the composition of the title of the lead article in many copies of the July 24 issue resulted from a press breakdown during the run. A number of copies incorrectly read "Kinds of 'Nebs' in Dyed Cotton Piece Goods"

The title should read "Kinds of 'Neps' in Dyed Cotton Piece Goods".

NOTE

Re: "The Development of the Drimarene Class of Reactive Dyes"

YOUR attention is called to the article, "The Development of the Drimarene Class of Reactive Dyes", by Drs Miro Capponi, Emil Metzger and Achille Giamara, which appeared on pages 23-32 of the July 10, 1961 issue.

Figures 3 and 5, which appeared originally on page 29, are correctly reproduced below. Figure 3 was inverted in the article, while Figure 5 did not clearly outline the sample swatches in the lower portion of the illustration.

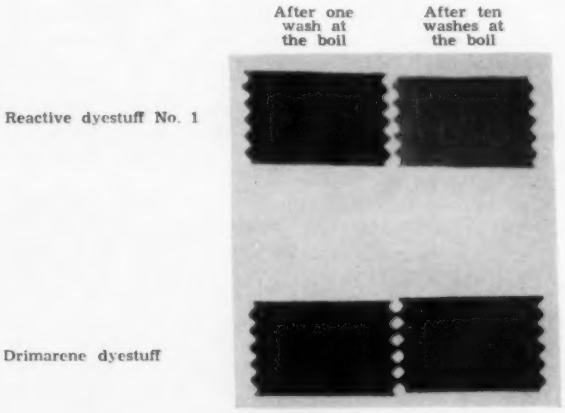

Figure 3

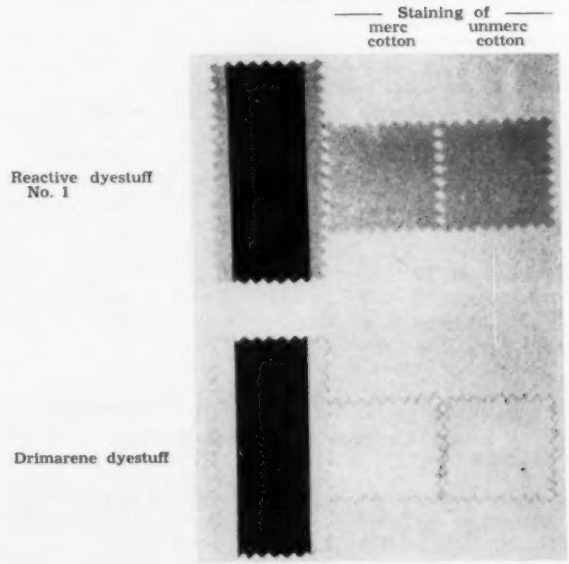

Figure 5
Washing-off tests

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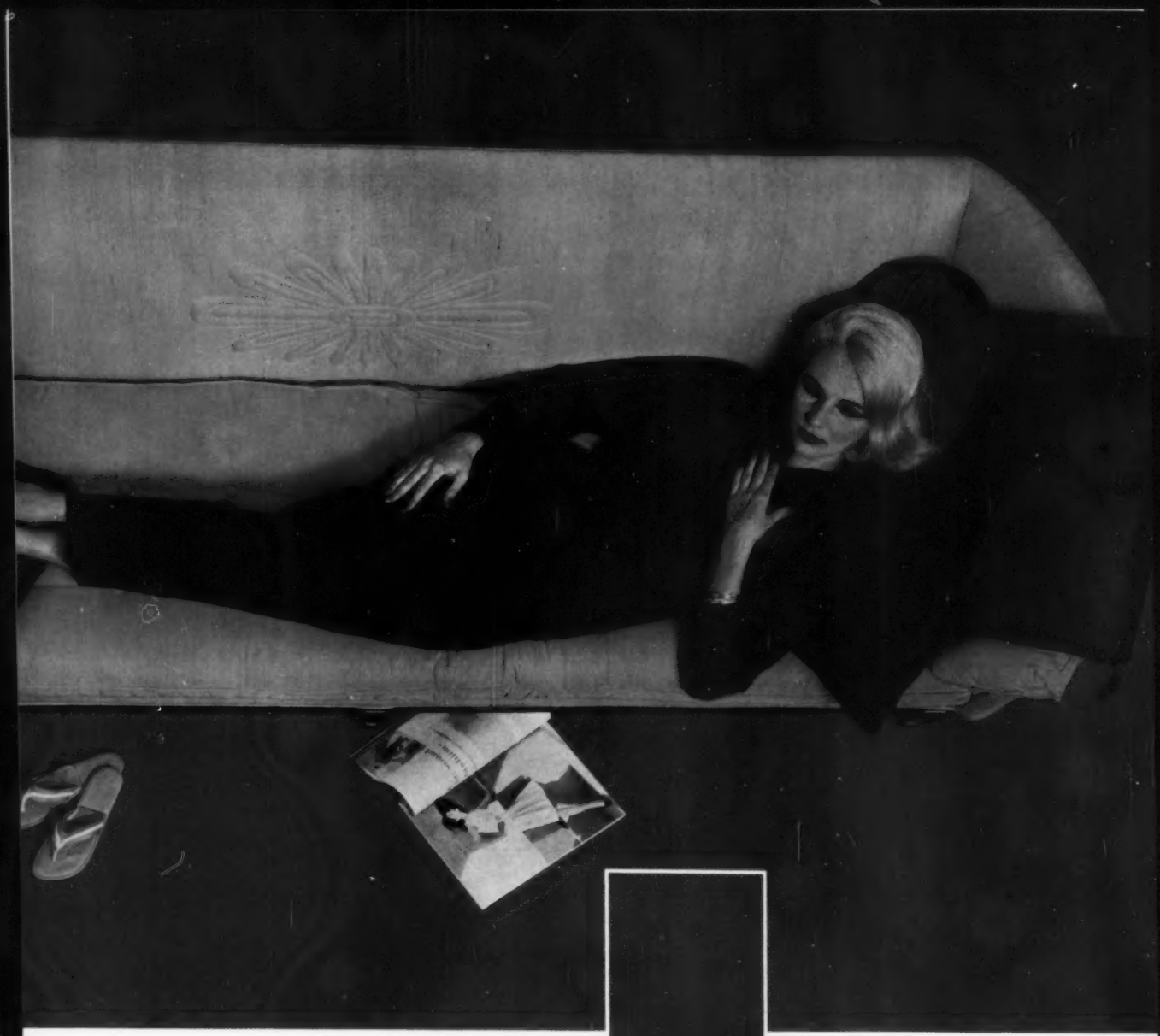

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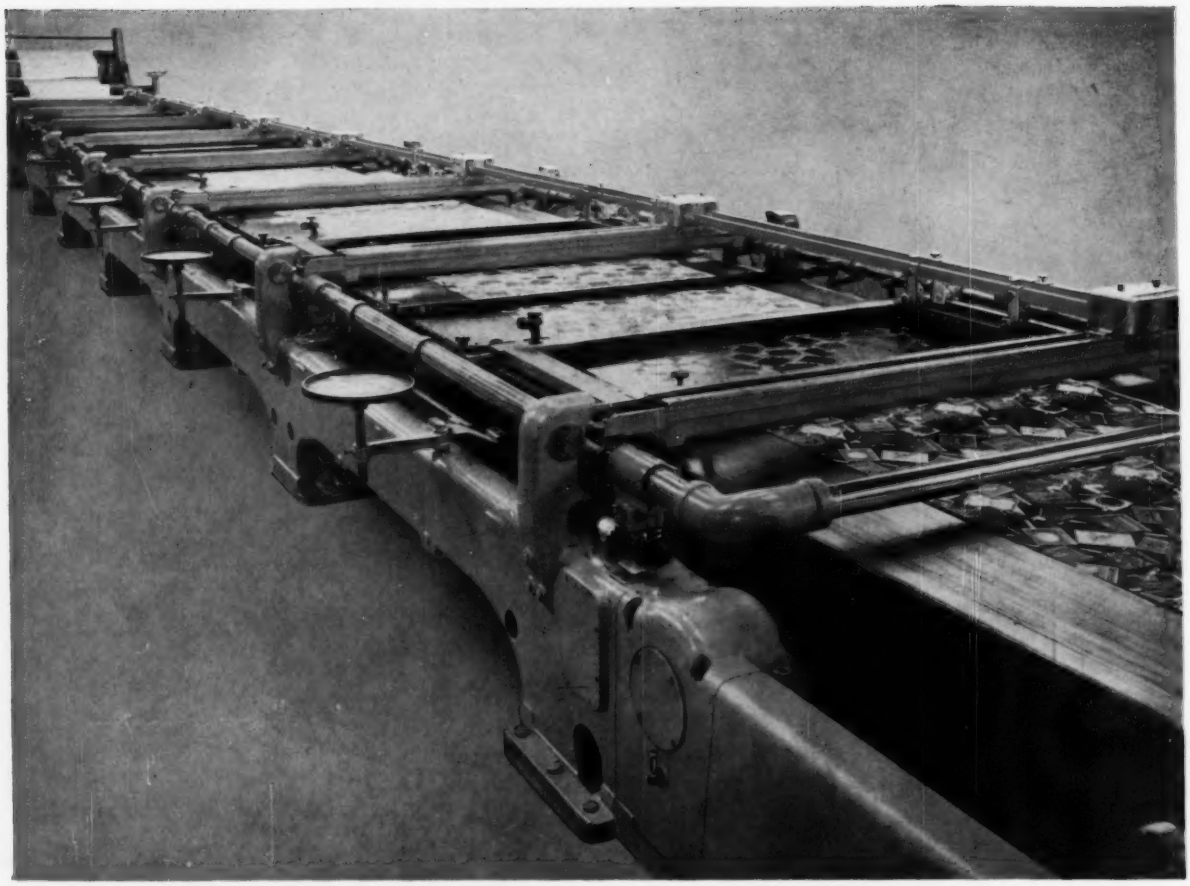

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STUDENT CHAPTERS

Auburn University, Bradford Durfee College of Technology, Clemson College, Georgia Institute of Technology, Lowell Technological Institute, New Bedford Institute of Technology, North Carolina State College, Philadelphia College of Textiles and Science

Northern New England Section——

SYMPOSIUM ON "TEXTILE FINISHING"*

PANEL

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I. Chemical Finishing of Cellulose

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IT is again a great pleasure for me to participate in one of your early symposiums and to present introductory remarks on the subject of chemical finishing of cellulose textiles. Two years ago, in a similar meeting here on the subject of "Resins and Polymers," great emphasis was placed by some of us on the panel on the development of the fiber-reactive polymer concept. By this new technique, it was shown to be possible to engineer resins and polymers which have functional groups that can react with the surface of specific fibers, thereby producing greater permanency of the finish to washing and drycleaning.

Practical use of such fiber-reactive resins and polymers has now been made in new nonwoven fabric binders, in pigment binders, in fiber glass finishes, in wool feltproofing treatments, in rug-backing compounds, in leather-reactive resins, in paper saturation, and in tire-cord adhesives.

Depending upon the end-use of the resins and polymers, the functional groups which have been introduced in textile finishes to produce fiber reactions include: the epoxy, ethylene imine, propylene imine, methylol, silanic ester, ketene, isocyanate, Werner complex, vinyl sulfone, and aldehyde groups.

In the case of reactive film-forming resins and polymers, we have been concerned primarily with fiber-coating materials and with only superficial reaction or slight chemical modification of the fibrous substrate. A more profound use of the chemical-reactivity principle involves the internal modification of the fiber polymer, so as to produce new permanent functional properties in the textile material. In this case, the fiber is considered to be an organic compound which has functional groups that can undergo reaction with the applied material. After reaction has taken place, the fiber polymer is now a derivative of the starting material. This general process of altering the properties of the polymer contained in fibers has been loosely called chemical finishing.

The concept of chemical finishing of textile materials is not new, nor are the reactants used necessarily unique. What is new is the practical development of the means of chemically modifying fiber properties in textile manufacturing operations and the increasing acceptance of such processes by the textile industry. This is well illustrated by the work (already in commercial or development stages) which is going on using pure chemical crosslinking of swollen cellulose; permanent setting of wool through polymer alteration; waterproofing of textiles with vapors of silanes; aerosol application of reactive chemicals; organofunctional silicone modification of inorganic fibers; atomic particle irradiation of fibers; fiber reactions induced by ultrasonic vibrations; permanent germicidal treatments for cellulose through polymer modification; and electric-arc conversion of cellulose into graphite fabrics for high-temperature laminates, as a few examples.

The present philosophy of considering textile fibers as simple organic chemicals which can undergo classic organic reactions is being well applied to the case of cellulosic fibers, with special emphasis on the crosslinking of cellulose. Here, we use the reactivity of the hydroxyl groups in cellulose to produce mono- or diesters and ethers of the polymer. With diffusible di- or polyfunctional hydroxyl reactive compounds, we obtain, in such finishes, dimensional stability of the fibrous material, crease resistance and "wash-and-wear" effects. While the older classes of materials used in this application are compounds which derive their cellulose reactivity from formaldehyde functional groups (such as methylols, alkoxymethyl, acetoxymethyl, and quaternary groups), many of the newer reagents are based on polycarboxylic acids, isocyanates, imines, epoxides, active methylenes, active halogens, and ketene groups.

By use of monofunctional reagents containing such hydroxyl reactive sites, it also is possible to introduce into the cellulose fibers new radicals which produce other properties, such as permanent water repellency, germicidal effects, mildewproofing, fire resistance, oil repellency, permanent softening, and heat resistance and light resistance.

It has now become axiomatic in product development work, that any compound which has hydroxyl reactive functional groups, may be used to modify cellulosic fibers. What is more important, however, is not so much the organic chemistry of the reaction, but rather the physical chemistry of the mechanism by which cellulose properties change with the introduction of new groups. In the present practice of reacting chemicals

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with fiber under the conditions of pad, dry and cure, or even in vapor and solvent treatments, the reactions which take place are heterogeneous in nature. This results from the requirement of maintaining fiber structure, short diffusion times, short reaction times, and from the natural low accessibility of the hydroxyl groups in linen, cotton and rayon under the presently known conditions of treatment.

It is known, in general, that the accessibility of the reactive sites in cellulose varies with the fiber, with the chemical compound, with the solvent system, and with the application conditions used in the particular process. We cannot even approach any degree of homogeneity in chemical finishing of cellulose until we can learn more about how and where the chemicals go in the polymer mass of the fiber and how we can direct these to a specific site for a particular effect.

We suspect, however, and have shown this in a few cases, that if uniform chemical reactions can be made to take place along the whole polymer chains, then we may eliminate such undesirable side effects as tensile strength loss or reduced wear life with some presently used finishes and also improve the efficiency and durability of the applied chemical and reduce the finishing cost.

The textile finishing industry is at the dawn of a new era wherein chemical reactions on fibers through new techniques will become one of the most important parts of textile manufacture. No longer will finishing be concerned with simple hand, feel, texture, or visual improvements in a fabric. By chemical finishing, both the natural and man-made fibers can be given new properties which cannot be built into them either in nature or in the synthetic fiber plants, and textiles can be engineered to have all the properties needed in conventional and new end-uses.

* * *

Question: What research is being conducted to produce textile finishes which do not impair the tear strength of cotton?

Answer: For many years it had been hoped that, by the synthesis of some new unique type of cellulose crosslinking agent, it might be possible to produce dimensional stability and crease resistance without reducing the tear strength and wear resistance of cotton and rayon fabrics. It has been generally accepted now that this is a fruitless search. The crosslinking of cellulose by any compound under the present pad, dry and cure method leads to reduction in fiber extensibility and therefore in fiber toughness. We are beginning to learn, however, that if we can introduce crosslinkages in a more homogeneous manner along a swollen cellulose polymer network, then strength properties can be maintained. The problem of fabric strength is not so much related to the chemical agent applied, but rather to the heterogeneous formation of crossbonds, wherein some regions of the cellulose fibers receive a high density of crossbonds, while less accessible regions are unmodified. This leads to weak spots in the polymer network, because of stress concentration at the more densely crosslinked regions. The only practical method now available to maintain fabric tear strength is to use fiber-reactive or durable plasticizing or softening agents along with the main resin or crosslinking agent.

Q: You have stated that the number of hydroxyl groups available to the finishing agent is most important in proper finishing. Can you tell us what is the effect of carbonyl reducing agents on the properties of the treated fabrics?

A: The uses of reducing agents such as sodium bisulfite and sodium borohydride have been explored, not prior to finishing, but in the afterwashing of treated fabrics. With some of the dialdehyde, acetal, and blended finishes it has been observed that yellowing of the fabrics occurs on storage. This effect results from the presence of free carbonyl groups in the treated textile. By removing such groups, as with sodium borohydride washing, the yellowing problem is minimized.

Q: You have mentioned the practical problem of trying to introduce uniformly placed crosslinkages in cotton cellulose which could lead to improved mechanical properties. If this is a problem with cotton, is it not more promising to work with and improve rayon, which has more accessible hydroxyl groups?

A: The question is a proper one, if one is concerned with the development of improved rayon fabrics. Reactions on rayon fibers are more uniform, and it is of greater promise to effect homogeneous crosslinking of this form of cellulose. This will not solve the problem of the cotton-finishing industry, whose interest is to improve cotton textiles. Rayons of varying accessibilities are useful to study basic reactions and mechanisms, but we must eventually go back to cotton if this is where the deficiencies of finishing lie. Work is progressing on attempts to make cotton more like rayon during the chemical-treating process. This involves reactions under conditions wherein both crystalline and amorphous regions of the cellulose become accessible to the reagent applied.

Q: What effects do softeners and plasticizers have on the properties of the resin films and how this relates to tear strength?

A: Plasticizers and softeners in rigid and stiff film-forming polymers have the properties of improving the flexibility and toughness of the deposited film. In the crosslinking of cellulose, we are not concerned with plasticization of resin films. As previously stated, the reduction in tear strength comes about from the reduction of fiber extensibility. Plasticizers and softeners in a crosslinking fabric finish have no effect on the stress-strain properties of the individual fibers, while crosslinking does. The improvement noted in tear strength by the use of softeners comes about from the reduction in interfiber friction. This allows the fibers to move more easily to the point of minimum deformation during the tear test period, thereby more fibers can be brought together to relieve the applied stress. Without softeners, the fibers and yarns would tend to break individually and thereby support a lower applied stress. In cases where finishing formulas also contain polymeric, cellulose-indiffusible materials, then the softeners serve a dual purpose of plasticizing the resin film and also lubricating the fiber surfaces. While there are specific differences in efficiency, durability, compatibility, tactile properties, and heat resistance, such textile softeners as silicone polymers, polyethylene emulsions, cationic fatty materials, wax emulsions and the like all help to restore the tear strength of crosslinked cotton and rayon fabrics.

Q: You have stated that the number of hydroxyl groups available to the resin or crosslinking agent is limited in the present pad, dry and cure system. Since both reactive softeners and thermoplastic resins are used in conjunction with "wash-and-wear" chemicals, do these also react with the hydroxyl groups or does the "wash-and-wear" chemical monopolize the situation?

A: The monomeric cellulose cross-

linking agents are all diffusible in cellulose. The accessibility of hydroxyl groups in the fiber, however, will vary not only with fiber type and its state of swelling, but also will vary widely with the molecular size, solubility and molecular architecture of the compound. Consequently, there is not one basic constant of cellulose fibers which may be called "accessibility." There are a multitude of accessibilities and these are widely different for nitrogen gas, for mineral acids, for formaldehyde, for methylol ureas, for epoxides, for dyes, etc etc. Any cellulose-diffusible compound has a particular number of hydroxyl groups accessible to it under a particular set of ambient conditions. With cellulose-indiffusible materials, such as the textile softeners and thermoplastic emulsion polymers, the only hydroxyl groups available for reaction are those on the gross fiber surfaces. This number is not known, but must be very small compared with that of the crystalline and amorphous or less dense regions in the fiber mass. The durability of such finishing agents which may contain epoxy, methylol, imine, aldehyde, and other reactive groups can result from partial reaction with cellulose hydroxyls on the fiber surfaces, from co-reaction with the crosslinking agent, and from reaction with itself to give an insoluble or infusible compound. In the case of finishing formulas which contain a multitude of hydroxyl-reactive chemicals, then competition for reaction with the fibers will vary with the diffusibility of the compounds and with their relative activities, in a thermodynamic sense.

Q: You have stated that with some finishing formulas both crosslinking reactions and film formations may be involved. What part of the finishing results are attributable to crosslinking and what part to film formation?

A: It is not possible to give a general answer to this question, since every crosslinking finishing formula must be separately considered. If we deliberately put into the formulas polymeric materials such as acrylic polymers, polyvinylacetate, starches, etc, then the film-forming component contributes to the overall properties obtained from the finish. But, even in the absence of polymeric materials, there is a wide difference among the crosslinking agents. Take, for example, the case of the creaseproofing of cellulose by the citric acid process we discussed at the 1960 Gordon Research Conference. Here, only esterification of the cellulose hydroxyls is involved and no resins or films can form under the conditions used. Secondly, consider the case of a pure noncommercial grade of dimethylol ethylene urea applied under conditions which do not cause decomposition. Here, the prime reaction is with the fibers, and it is not possible to form films of polymeric DMEU under the conditions of cure either on cellulose or on inert fibers such as fiber glass. With some of the commercial blends of DMEU and dimethylol ureas, triazones and melamine-formaldehyde condensates, then resin formation can occur from co-reaction among the ingredients. While such side reactions may alter the properties of the finish, the production of crease resistance and dimensional stability still depends upon the crosslinking of the cellulose. In low applied concentrations of compounds which have hydroxyl-reactive functional groups and no other interfering groups, then reaction with the cellulose is predominant. When the compound has secondary groups that can compete in the reaction with the cellulose hydroxyls, then both resin formation and fiber reactions may occur, depending upon the relative concentrations of available hydroxyls, and of the secondary groups. We have therefore, compounds which can react only with the cellulose fibers and also others which can undergo side reactions, thereby diluting the efficiency of the material and producing side effects. The production of both crease resistance and dimensional stability requires, as a minimum, the formation of crosslinkages in the cellulose. When such reactions are deliberately prevented from taking place, then these properties are no longer present.

Q: The subject of chlorine resistance of "minimum-care" finishes for cotton has not been discussed. Has the problem been solved?

A: The technical problem of producing complete resistance to chlorine bleaches in "wash-and-wear"-finished cottons has long been solved. What has not been solved, however, is the matter of economics, toxicity and side effects. We know now that, if we synthesize a di- or polyfunctional compounds which contains hydroxyl-reactive groups, such a compound will be a chlorine-proof finishing agent, if no amido nitrogen is present in its structure. We have long ago shown that such compounds as diglycidyl ether, vinyl cyclohexene dioxide, dialdehyde tetra alkyl acetals, quaternaries of chloromethyl ethers, selected polybasic acids, and dialkoxytetrahydrofurans are efficient chlorine-proof "wash-and-wear" finishing agents for cellulosic fibers. Also, such simpler materials as formaldehyde, epichlorohydrin, bis chloromethyl ethers, di-ketenes, bis lactones, and vinyl sulfone derivatives can be made to give durable chlorine-proof finishes for white fabrics. In none of these finishes, however, do we have the simplicity and economics of nitrogen-formaldehyde-based compounds. Consequently, while some of the above chlorine-proof compounds are in use, their consumption is limited compared with such materials as triazine-formaldehyde products, triazone condensates, pyrimidones, and even simpler urea- and melamine-formaldehyde products which cover a wide range of resistance to chlorine bleaches from good to poor.

Q: One of the problems that confronts those of us who work in finishing plants is the myriad of materials presented to us by various suppliers and the difficulty of taking full advantage of the properties of such materials. At the same time, we are at a disadvantage because little guidance is given and little information is supplied about the composition of basic chemical properties of the finishing agents.

A: As I mentioned in my introductory remarks, it is going to be increasingly more important for plant personnel to use more and more scientific methods to best utilize both fiber properties and finishing techniques to produce textiles having optimum functional properties for a particular end-use. This means, in the case of chemical finishes, better knowledge of the organic and physical chemistry of finishing agents. I can sympathize with you about the present status of the chemical-selling field, where most products are sold for what they do and not what they are. It is ludicrous to attempt to use scientific methods, when such diverse undisclosed compositions as methylol stearamide, octadecyl ketene dimer, methyl hydrogen polysiloxanes, and chloromethyl wax derivatives are all sold under the generic name of "durable water repellents." Even more confounding is the sales classification of fiber reactants to cover such diverse chemical identities as diglycidyl ethers, tetraalkyl acetals of dialdehydes, formals of polyols, methylol triazines, chloromethyl ethers, and vinyl sulfone compounds. To attempt

to use science while having only a sales-generic classification of such materials is frustrating. Remember that the best utilization of now-prominent textile finishing agents did not come about until the chemical identity of such products became known. This is well illustrated by basic and applied research which has been done on organo-phosphorus flameproofing treatments, on the heterocyclic urea-formaldehyde condensates, on the methyl hydrogen polysiloxane, and on numerous other chemical identities. In order to best benefit the consumer, the converter, the finishing plant, and the chemical supplier of a finishing agent, it is important for the plant technologist or scientist to know the material with which he is working. My suggestion is that you insist as much as possible that your chemical supplier reveal to you either the specific or at least the general chemical composition of the product he wants to sell to you.

Q: Mr Gagliardi, you have seen the advent of fiber-reactive dyestuffs where reactivity with hydroxyl groups is used to fix these on the fiber. Is there possibility of using this type of system in crosslinking reactions?

A: The principle utilized in fiber-reactive dyes is exactly the same as that used in finishing. Here, however, instead of fixing a water-repellent group, a softener, a fireproofing agent, or a crosslinking radical, what is fixed in the fiber is a colored compound we call a dye. The cyanuric chloride group present in one class of fiber-reactive dyes has already been used in pure form to crosslink cellulose. Also, the vinyl sulfone group present in a second class of fiber-reactive dyes has been utilized for crosslinking in the form of divinyl sulfone or masked sulfone adducts. There is no question that such basic and classical organic reactions will be further explored on textiles for finishing purposes. We have reached the stage where textile fibers can be considered to be simple organic chemicals. By utilizing their available functionality, we can make derivatives of them in fibrous form, which are in fact new fibers or new compounds. It is impossible to breed into natural fibers or to place in man-made fibers all of the properties needed for all end uses of textiles. By the technology of chemical finishing, however, we can produce at will new properties which will last for the life of the textile fabric.

Q: Is any work being done to use high energy irradiation to produce permanent changes in cellulose properties?

A: Irradiation of textile fibers by various energy sources, including atomic particles, is being actively investigated. At first glance, the major effect noted on cellulose fibers is degradation of the polymer network. By directing such new energy sources to specific problems, however, it appears now to be possible to induce polymerization of monomers in cellulose, to graft monomers as side chains, to alter microbiological properties, and to induce reactions which cannot normally take place under older conditions. Irradiation, ultrasonic techniques, vapor reactions, pressure techniques, and advanced organic synthesis on fibers, while still in their infancy, will soon become major tools for the textile finishing plant.

II. The Mechanical Finishing of Fabrics

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THE topic allotted to me is a very broad one and conceivably could consume several hours in presentation, even if only in a superficial discussion. Inasmuch as I am intent on completing my introduction within ten minutes, and let the chips fall where they may in the Open Forum, I shall first generalize and then become quite specific, and in this way I hope that some motivation for the questioning may result.

There is in the present era of finishing no clear-cut differentiation into mechanical and chemical finishing as such, but both are so interrelated as to be adjuncts to one another for the express purpose of producing an end product appealing to the cutter and consumer.

One factor, however, is quite apparent, and that is that the mechanical phase is every bit as important as is the chemical. Unfortunately, the mechanical segment has been overlooked or shadowed in the development picture, due to the lack of glamour as well as an oversight, caused by the seemingly routine procedure used.

Meanwhile, we are deluged with new chemical products, each one of which as it comes into being is supposedly to revolutionize our concept of finishing as we understand it, and relegate the finisher into the ideal situation of being problem free due to the simplicity and self-control of the new wonder products.

Theoretically, at least, the finisher can wear out the seat of his trousers while sitting and listening to the salesman of chemical products who:

First, transmits the latest of the jokes which have not reached the isolation booth, the finishing plant office, and then,

Secondly, extols the merits of the new chemical products which are to forever cast into limbo even those products which have been in most recent use.

We have not as yet reached this Utopia.

It, therefore, would seem logical to have the engineering brains accelerate their rate of development to keep pace with the chemical industry, so that the seemingly inevitable transition into semi or full automation of the future will be gradual, rather than abrupt and thus fraught with disappointments.

However, this transition into mechanical progress at a rate capable of equality with chemical development needs the full cooperation of both management and government. This simply means that obsolete equipment must be replaced by new, efficient, and more diversified types, which is the responsibility of management. Management must, however, receive the cooperation of government in a more realistic depreciation write-off.

Both management and government are considered as hard shells, which need the correct formulation to per-

meate them. This requires combined and concentrated efforts rather than isolated probing by any one individual to attain any degree of success.

The specifics to which I referred are confined to the most pertinent phases of mechanical finishing of the day, namely, padding, drying and curing.

Padding: The immersion of a fabric in and subsequent expression of excess agent out of the fabric using a two- or three-roll pad or pad dye unit to attain a wet pick-up of 65 to 75 percent. This procedure allows for proper penetration of the solute into the interior of the fabric.

Drying: The exposure of the impregnated fabric to energy in the form of heat as conduction on cans, as radiation, convection or infra-red radiation on tenter frames, or to convection systems in loop or roller dryers.

Curing: The actual activation of the latent accelerator to promote polymerization and/or crosslinking of resin and/or reactant by exposure of the padded and dried fabric to elevated temperatures in convection or radiation units.

The primary intent in the entire sequence is to first allocate the agents as solutes internally, as well as externally, in the fabric, and subsequently to dry and cure them *in situ.* It is upon this premise that I shall concentrate my attention.

First and foremost is the contention that an unbiased analysis and appraisal of present practice indicates that the majority fail by far to accomplish this end result.

If immersion time and solute alone are the components of the pad bath, it is admittedly a first step toward accomplishment, provided the extractive pressure is sufficient to effect internal deposition. This is less difficult on the lighter and softer goods than on the medium to heavy constructions. It also means that a difference in plastometer or durometer ratings of the rolls should be given some consideration, as nip width is a factor in extraction and penetration.

The drying phase, however, is the most overlooked or abused operation in this sequence. It is here assumed that production is of greatest importance, and, therefore, temperatures slightly below those at which curing occurs are as effective as lower temperatures and slower productive rates. This is sheer optimism and a fallacy. The full efficiency of a well-controlled padding or impregnation is defeated by this premise.

If any one phase of the sequence is more deleterious to an effective end result, it is the failure to consider what can, and too frequently does, occur due to migration of nonsubstantive solutes in the drying operation. This is factual, whether the drying is done by conduction, convection or radiation.

Vapor-pressure gradients or differentials without due consideration of balance on each side of the fabric will cause not only migratory effects to the source or sources of heat, but a difference from side to side.

There naturally results a loss of internal solute which minimizes the efficiency of the end result from the standpoint of crease angles. It also gives the false illusion that the breaking-strength improvement is attained with no loss in other properties.

Furthermore, such lack of control can only result in harshness of hand and simplicity of removal in washing with marked decreases in "ease-of-care" characteristics. Initially well-embossed patterns also lose their identity as such too quickly. Practices such as those mentioned can do nothing to aid the desire of the consumer for more of these "minimum-care" fabrics.

One or unisided exposure of heat simply accentuates the problem as migration of nonsubstantive solute is to the one heat source, and by cyclic interchange of free water, the concentration of the solute is high on the heat source side of the fabric.

Even infra-red and its unified control at the source on both sides does not prevent migration. Even this shows a higher concentration of solid on the upper surface of the fabric due to a more efficient removal of the drag or boundary layer of moisture in contact with the upper surface than is true at the bottom surface. This is indicative of better convection at the upper surface. This difference in surface effect on radiant drying can be minimized by vertical rather than horizontal units, as the convection systems at each infra-red exposed surface is then more uniform.

Migration cannot be totally eliminated by present-day methods of drying, but its effects can be decreased by lower-temperature heat application at least until the critical moisture contents of the respective fibers are attained. Some of the critical moisture contents of fabrics (that content of moisture which is not free water and therefore will not cyclically interchange) are:

Cotton—26 percent
Wool—39 percent
Viscose—38 percent
Nylon—8 percent.

This simply means that a fabric should preferably be dried in the preliminary stages at lower temperatures in units such as roller or oven predryers or in zoned tenters, and subsequently brought to dryness at elevated temperatures after the critical moisture content range has been attained.

One aspect of drying which deserves future consideration is the high - frequency electro - magnetic force produced in dielectric heating units. This, of course, is very high in cost and requires equipment development. It does, however, preclude migration as the energy is absorbed by the water and it is eliminated *in situ.*

As previously mentioned, curing is that unit operation which effects polymerization or crosslinking, and, as is well known, temperature and time are in an inverse relationship. The fact that a fabric is exposed to a specific temperature for a given period of time, which too frequently is shortened, is no assurance that the effect is obtained as presumed. Rarely is consideration or thought given to the fact that the fabric requires time to attain this temperature before activation can occur.

Many of the poor or low efficiency fixations are due to the failure of the internal structure to attain its norm for the time-temperature relationship, and only surface or superficial reactivity results. This is certainly not consistent with the production of a uniform and acceptable end product.

Another thought to be borne in mind is that heat stored in the fabric be given sufficient time for release prior to rolling or packing into trucks, lest this heat be stored and cause non-uniform degradation of the basic fiber content due to more lengthy exposure. In many instances, it would seem more feasible to expose the fabric to a uniform flow of cold air prior to any possible occlusion of heat subsequent to its emergence from the cure box.

* * *

Question: You stated that, in the drying of a resin-treated fabric, initially a low temperature is desirable to avoid migration and then the temperature should be raised as you proceeded to dry the cloth. Does the same theory apply in drying a coated

fabric, an open dispersion-coated fabric?

Answer: The answer to your question is that the same principles would not be involved, because you have a nonsubstantive on the surface of the material, rather than imparted internally in the material itself. The general plan would be to go more on the system of what is characteristic of water itself, because water is the only substance present which will migrate under these conditions, which is the antithesis of what you have with nonsubstantive internal solutes.

Q: Does infra-red drying promote any primary polymeric reactions?

A: If infra-red does any work of that particular nature, it would have to do so at the surface, because, despite many claims to the contrary, infra-red radiation drying is primarily a surface effect, rather than an internal effect. It would be a surface degradation then.

Q: Did I understand you to say that latex impregnations, or in the case of latex, migration in drying, is not an important problem?

As a matter of fact, that isn't quite true, because with nonwoven fabrics, the most serious problem is the migration of the latex or polymer in drying, to uniformly impregnate it and dry it, heat it on both sides. You can separate the sheet in the middle and you will have two fabrics coated on one side, as though there is nothing in the middle at all.

The serious problem is, how to make the particles substantive or how to cause them to jell or in some manner migrate during the drying operation.

A: I was talking specifically and particularly about the diffusion stage, which is within the fiber and, of course, you do not get any of the latex within the fiber itself. You can get migration in a nonwoven material because you have a fibrous or random web structure, as compared with the twisted yarn constructed material and capillarity only is involved in the former or nonwoven.

III. Chemical Finishing of Wool and Blended Fabrics

WERNER von BERGEN
Associate Director of Research
J P Stevens & Company

IN the December 26, 1960 issue of the Dyestuff Reporter, my old friend, P J Wood, in his column "Inter Alia—Inter Nos", expressed interest in the welfare of wool. He said:

"It pays to give woolens (and wives) extra special care. They last longer; they look well longer."

I agree with Professor Whewell of Leeds, who presented a paper on "Current Trends in Textile Finishing" at the 7th Canadian Textile Seminar in September, 1960, that the recent developments in wool finishing have been highly stimulated by, we have to admit, successful developments in the man-made fiber industry, referring specifically to the introduction of "wash-and-wear" and "easy-care" fabrics. The interesting part is that a great effort is still being directed by the man-made fiber producers towards endowing man-made fibers with the peculiar characteristics of the natural fibers and specifically wool. The most striking example is the new Orlon-21, Sayelle. This fiber consists of a bicomponent structure resulting in a three-dimensional spiral crimp very closely resembling fine wool.

As Professor Whewell brought out in his paper, new finishes have a high prestige value. Many of them are considered as "gimmicks", but generally they are based on interesting new ideas or the ingenious application of old ones.

The up-to-date wool finisher recognizes the fact that he can draw on fundamental research on wool and man-made fiber structure and their chemistry and on the chemistry of potentially useful compounds for shrinkproofing, mothproofing, water- and oil-repellent treatments, permanent setting and lustering, supplemented by the results of research and development on topics such as swelling and moisture-absorbent characteristics, crosslinking reactions, and on basic principles underlying standard finishing processes, such as scouring, fulling, carbonizing, bleaching and dyeing.

"Wash-and-wear" "and minimum-care" wool fabrics have become popular slogans in the promotion of woolen and worsted fabrics. The organization which does the most in this field is the Wool Bureau, which is supported from funds from the International Secretariat. In addition, the Wool Laboratory of the United States Department of Agriculture at Albany, Calif, devotes a great deal of effort to that field.

In October, 1959, A J Farnworth of Australia presented to your group an excellent paper on "Permanent Setting of Wool," which included his story on the "Si-Ro-Set Process" and on "Washable 'Non-Iron' Wool Fabrics." (*1*). Since that time the Si-Ro-Set process, according to Jerry Laxer, is now used in this country by over forty tailoring houses. This process, as you remember, is used to put the permanent crease in trousers and which, I have to say from my own experience, stands up quite well. However, up to now I have not seen any wool garments labeled "wash-and-wear", which means "No ironing necessary after washing."

It is interesting to note that thirty years ago Professor Speakman, in a paper discussing "Recent Developments in the Study of Wool Finishing Processes," mentioned only the chlorination process as being suitable for imparting an unshrinkable finish to wool goods. In the last thirty years, tremendous strides have been made in the development of many other processes. I would like to mention only the most recent ones.

The Harriset process, although not applied to fabric, was probably the first successful continuous chlorination process applied to wool tops as a basis for the washable cushion-sole socks for the Army.

In 1947, the Stevenson Company in

England obtained a patent for a process based on the use of hypochlorite and potassium permanganate. Cluett, Peabody were the licensees for this process in this country, known as the Sanforlan process. The Sanforlan process is an eight-to-nine-hour batch process which can be done either in a dolly washer or in a dye kettle.

In 1956, the same company introduced a new process now known as Dylanize, which has as its basis an oxidation treatment with permonosulfuric acid (H_2SO_5), followed by a reduction treatment with sodium bisulfite. The contact time with the chemicals is reduced to two minutes or less, and the whole process, including the final rinsing, can be accomplished in a half hour.

In 1959, Geigy obtained a patent on its Chloregal acid chlorination process, a batch process done in a dye kettle.

In the same year, Australia announced its Sironize process, using potassium permanganate in a saturated salt solution, a batch process discussed in detail by Dr Farnworth.

USDA has several patents on the application of epoxy-polyamide resins applied by padding, followed by curing.

Rohm & Haas developed an acrylic polymer resin process, with five to 10 percent solids on the weight of the fabric padded on, followed by curing at 280-300°F.

Last year, a patent was granted to M Lewin, a member of the Israeli Government Laboratory, for a bromination process, using potassium bromide in a sulfuric acid and salt solution.

A very interesting process is Robbart's vapor-phase silane treatment, which combines water repellency with shrink resistance.

From our own experiments, we can say that every one of these processes will reduce the felting shrinkage of any wool fabric to zero. However, other factors such as the hand of the cloth, the effect on dyeing, and even more, the economics, decide to what extent a process will become commercially successful.

An oddity is a process for shrinkproofing wool by mechanical treatment, a patent recently granted to T J Coe of the USDA, in which the wool fibers are descaled by drawing the wool, in wet or dry condition, over wires (card wires) the sides of which are provided with minute cutting edges or teeth. The roughness of the wire is produced by blasting it with an air stream containing very fine abrasive grit.

"WASH-AND-WEAR" WOOL—MAN-MADE FIBER BLENDED FABRICS———By combining wool with a sufficient amount of nonfelting fibers, one may avoid a shrink-resistant treatment. However, depending on the type of fabric, worsted or woolens, the minimum amount of polyester and acrylic fibers may vary in wide limits.

In worsted fabrics, for example, a 50 percent Dacron-50 percent wool produces a good washable fabric; however, in woolen flannels the man-made fiber part must be increased to a minimum of 65 percent.

I am skeptical of the statement made in an article by Rippner (2) in the November 14, 1960 issue of *American Dyestuff Reporter,* that blending 70 parts of wool with 30 parts of Dynel would produce an excellent washable fabric.

As to *mothproofing,* even though the industry had in Geigy's Mitin FF and in General Dyestuff's Eulan two excellent products available, not many mills were interested in spending approximately five cents per yard for permanent mothproofing.

Considerable impetus was given to mothproofing since the introduction of Dieldrin, an insect poison produced by Shell Chemical Co (3), which can be applied in emulsion form at a price of one cent or less per pound of wool. The product can be applied in a batch process in piece dyeing, and is also used in the continuous dyeing of carpet wools, or it can be padded on, as first described in a paper by Redston (4) at the 1959 AATCC Convention.

The continuous application of Dieldrin emulsion in a padder is the ideal way. However, one must see to it that the cloth picks up enough Dieldrin to meet the minimum specifications of 0.04 percent as set up by the Department of Agriculture; there is also a maximum of 0.06 percent.

As to *waterproofing* of woolen and worsted goods, the silicones of Dow Corning and General Electric have found the most use. For the two methods of application available, there is 1) the exhaust method, and Dow Corning's No. 61 is a suitable product, and 2) the pad application, with Dow Corning's No. 71.

One of the interesting developments in the last year has been a combination treatment of mothproofing and waterproofing. Dow Corning's Bulletin No. U8-247 of April, 1960, gives details on experimental runs with such combinations. The main difficulty run into is the compatibility of the mothproofing agent with the silicon Syl-mer emulsion. Special consideration must be given to the pH of the catalyst. For example, the 72 catalyst, being on the alkaline side, will not go together with the strong acid solution necessary for the pick-up of the Dieldrin, such as Drewclad, whereas Syl-mer 71 catalyst with a pH between 3 and 6 is excellently suitable.

Oil repellency for woolen and worsted goods was first produced several years back by the application of Scotchgard, which is a fluorocarbon compound. Types FC208 and FC205 have been successfully applied, but here again the general use of such a product for woolen and worsted finishing is hampered by its high price, running up to 20 cents per pound for the chemicals alone.

As in mothproofing, new interest has been created by the success the Quartermaster Corps has had in developing an excellent water- and oil-repellent finish for a multipurpose shield fabric. It is known as Quarpel. First of all, they get a higher water repellency and oil repellency combined at a considerably lower cost than for fluorocarbon alone. This finish is produced by combining a fatty compound with a fluorochemical. We know that such combinations work on wool/man-made fiber blends; however, a suitable combination for 100 percent wool fabric has still to be found.

With regard to the combination of wool with man-made fibers, many of the standard processes, such as scouring, for example, have to be slightly altered because the removal of spinning oils from the more hydrophobic fibers is more difficult on account of the greater binding force between oil and the fibers.

In *fulling,* special attention has to be given to the time factor as the man-made fibers do not felt, and respectively retard the feltability of the wool. Therefore, the designer has to work together with the finisher to produce the construction which will enable the finisher to finish the fabric to the proper specifications.

In *carbonizing,* we should know from the fundamental properties of

the man-made fibers what concentration of sulfuric acid they will stand. Most of them are better than wool, but for example, the strength of nylon is considerably impaired in carbonizing. The various steaming operations and decating operations have to be analyzed carefully with regard to the time and temperature factors, especially for low-melting fibers, such as the new polypropylenes.

I cannot end without mentioning that probably the greatest difficulty we have encountered in the last ten years with 100 percent light-weight woolen fabrics is in the tailoring itself. Here, the addition of hydrophobic, man-made fibers has made the biggest inroad, because of their stabilizing effect.

LITERATURE CITED

(1) Farnworth, A J, "The Permanent Setting of Wool", *Am Dyestuff Reptr* 49, No. 26, 15-20 (December 26, 1961).
(2) Rippner, F C, "Dyeing and Finishing Blends of Wool and Dynel", *ibid* 49, No. 23, 69-70 (November 14, 1960).
(3) Lipson, M, and McPhee, J R, "The Mothproofing of Wool with Dieldrin", *Textile Research J* 28, 679 (1958).
(4) Redston, J P, "The Practical Application and Control of Dieldrin for Durable Mothproofing", *Am Dyestuff Reptr* 48, No. 6, 49-57 (March 23, 1959).

Membership Applications

July 6-19, 1961

CENTRAL ATLANTIC REGION

Metropolitan Section

Senior

Peter Drapans—Chemist, Sanco Piece Dye Works Inc, Phillipsburg, NJ. Sponsors: A L Peluso, A DeMaria.

Raymond P Nordheim—Member of executive committee, Cameo Curtains Inc, New York, NY. Sponsors: C A Baker, A E Johnson.

Murray L Rockman—Sales technician, Tubular Textile Machinery Corp, Woodside, NY. Sponsors: J W Miles, E E Weeden.

SOUTHERN REGION

Northern Piedmont Section

Senior

Stanley J Cavalier—Supv of color lab, Sidney Blumenthal & Co Inc, Rocky Mount, NC. Sponsors: S D Bennett, J E Conrad.

Robert L Jones—Research chemist, Burlington Industries, Res & Dev Center, Greensboro, NC. Sponsors: V C Smith, L Upshur.

Palmetto Section

Transfer to Senior

George F Hemphill Sr—Chemical engr for the bleachery division, Southern Bleachery & Print Works, Taylors, SC. Sponsors: A L Lefler, L M Wise Jr.

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Benjamin L Sellers—Shift dyer, Morgan Laces Inc, Wilmington, NC. Sponors: C A Gunther, M L Fillippeli Sr.

Transfer to Associate

C Philip Gamble—Latex control chemist, Wica Chemicals Inc, Charlotte, NC.

South Central Section

Senior

Tom L Howard—Dyer, Roane Hosiery Inc, Harriman, Tenn. Sponsors: J L Fancourt, J M McFarlane.

Transfer to Senior

Tom Tarwater Jr—Finishing foreman, Roane Hosiery Inc, Harriman, Tenn. Sponors: J L Fancourt, J M McFarlane.

Southeastern Section

Senior

Howard P Bennett—Organic research chemist, U S Dept of Agriculture, Southern Regional Research Lab, New Orleans, La. Sponsors: J D Guthrie, A L Bullock.

Leon H Chance—Chemist (organic), Southern Regional Research Lab, New Orleans, La. Sponsors: L W Mazzeno Jr, S R Hobart.

George A Moser—Sales rep, General Chemical Div, Allied Chem Corp, Atlanta, Ga. Sponsors: R M Jones, E A Schlirf.

Washington Section

Transfer to Senior

Graham A Pope—Textile chemist, Pacific Mills Div of Burlington Industries, Clarksville, Va. Sponsors: W L Hunter, C P Crute Jr.

STUDENT CHAPTER

New Bedford Institute of Technology

Student

Parameshwar Ramakrishnan — Graduate student in textile chemistry, New Bedford Institute of Technology, New Bedford, Mass. Sponsor: F Tripp.

AT LARGE

Senior

Phillip V Harper Jr—Tech service rep, Jefferson Chem Co Inc, Austin, Texas. Sponsors: G P Paine, G J Mandikos.

Associate

Mohammed Sharif—Ghazi Trading Corp, Karachi, West Pakistan.

Elected to Membership

July 26, 1961

No designation after name indicates Senior
(A) indicates Associate
(J) indicates Junior
(S) indicates Student
* indicates transfer from another class of membership.

NEW ENGLAND REGION

Western New England Section

Rocco A Bellantoni

CENTRAL ATLANTIC REGION

Delaware Valley Section

Martin S Maltenfort

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*Rudy W Malizia**

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Melton S Birmingham Jr
James A Connell Jr (J)
*Horace D Penn**

Piedmont Section

James T Currier

South Central Section

Jack C Rose (A)

Southeastern Section

James L Knowles Jr
Bethelehem K Andrews (J)

AT LARGE

Aubrey J Brown
Adrian J Stewart

AATCC—Deceased

Member	*Section*
JOHN SNOOP 236 East 5th Ave Roselle, NJ	Met
G W SEARELL Box 604 Passaic, NJ	Met

FORTESS TO RECEIVE '61 OLNEY MEDAL

FRED FORTESS, manager, Dyeing and Finishing Laboratories, Celanese Fibers Co, Charlotte, NC, has been selected to receive the 1961 Olney Medal.

The Olney Medal, endowed by the Howes Publishing Co, Inc, and awarded by AATCC for outstanding scientific achievement in the field of textile chemistry, will be presented to Mr Fortess at the AATCC National Convention at the Statler-Hilton Hotel in Buffalo, NY, on September 28.

Mr Fortess has made many contributions in basic physical and organic chemistry to a wide variety of textile fiber and fabric processing problems. He contributed to the development of Arnel triacetate and pioneered in the adaptation of polysilicone chemicals to textile finishing. He has done significant work in applications research in fermentation and wood-pulping by-product utilization and in the development of yarn and fiber lubricants and antistatic agents. He holds 35 patents in his field. Mr Fortess is author of numerous papers and has published original work on the mechanism of dyeing of hydrophobic fibers with disperse dyes and the mechanism of silicone finishing and effect on textile properties.

He is vice chairman of AATCC's Technical Committee on Research and a member of the Association's Executive Committee on Research. He has been active in the Association's technical work both at the national level and in the Piedmont Section. In 1956, he received the American Dyestuff Reporter Award for the best paper presented before a meeting of the Association and published in its *Proceedings*. The paper was titled "Dyeing, Finishing, and Heat-treating Arnel Triacetate."

F FORTESS

Mr Fortess was born in 1913, in Antwerp, Belgium. He was educated in Chicago, receiving a BS degree from the University of Chicago in 1935. He went on to graduate work in physical-organic chemistry, which resulted in his publication on the absorption spectra of Europium ions in solution.

In 1937, he went with the Research Laboratories of Universal Oil Products Company and in 1942 joined the Celanese Corporation of America.

He was chairman of the Gordon Research Conference on Textiles in 1960. At the 1957 conference, he presented a paper on "Factors Influencing the Dyeing of Acetate Fibers with Disperse Nonionic Dyes."

For the past five years, he has served as collaborator to the Southern Regional Research Laboratory of the Department of Agriculture, primarily concerned with fundamental research with repect to the structure and utilization of cotton.

Mr Fortess will present a paper on "The Finishing of Arnel Triacetate Fabrics" at the forthcoming Symposium on Textile Finishes, sponsored by the Swiss Association of Chemists and Colourists in Zurich, Switzerland in October.

The Olney Medalist is selected by the unanimous vote of a committee of five Senior members of AATCC. Milton Harris, president of Harris Research Laboratories and vice president of The Gillette Company, was chairman of this year's Committee. Dr Harris received the Olney Medal in 1945.

AATCC Calendar

COUNCIL: NATIONAL COMMITTEES
Sept 26 (Statler Hotel, Buffalo, NY); Council (8 PM)
Oct 26-27 (Sheraton Hotel, Philadelphia, Pa); TCR, research and administrative committees
Nov 17 (Hotel Sherman, Chicago, Ill); Council and Annual Meeting (2 PM)
Jan 26 (Hotel Commodore, New York, NY); Council (10 AM)
Apr 12-13 (Francis Marion Hotel, Charleston, SC); Council, administrative and research committees

NATIONAL CONVENTIONS
Sept 27-29, 1961 (Hotel Statler, Buffalo NY); Nov 14-17, 1962 (Atlanta Biltmore Hotel, Atlanta, Ga); Oct 30-Nov 2, 1963 (Boston, Mass); Oct 1-3, 1964 (Hotel Statler, New York, NY); Oct 14-16, 1965 (Conrad Hilton Hotel, Chicago, Ill); 1966 (Philadelphia, Pa)

DELAWARE VALLEY SECTION
Sept 15 (Wilmington, Del); Oct 27, Dec 1 (Beck's Restaurant, Philadelphia, Pa)

MID-WEST SECTION
Nov 18 (Chicago, Ill)

NORTHERN NEW ENGLAND SECTION
Sept 8 (Annual Outing); Oct 20 (Quartermaster R & E Command, Natick, Mass); Dec 18 (Motel 128, Dedham, Mass); Jan 19 (Woodlawn Country Club, Newton, Mass)

NORTHERN PIEDMONT SECTION
Oct 7 (Hotel Roanoke, Roanoke, Va)

PACIFIC NORTHWEST SECTION
Nov 10 (business meeting)

PACIFIC SOUTHWEST SECTION
Sept 30 (outing), Nov 17

PALMETTO SECTION
Sept 15-16 (Clemson House, Clemson, SC); Jan 20-21 (Poinsett Hotel, Greenville, SC); April 14-15, 1962 (Francis Marion Hotel, Charleston, SC)

PIEDMONT SECTION
Sept 23 (Hotel Barringer, Charlotte, NC); Jan 27 (Hotel Charlotte, Charlotte, NC); Apr 7 (Hotel Barringer, Charlotte, NC); June 8-9 (1962 Outing—Mayview Manor, Blowing Rock, NC); Sept 29, 1962 (Hotel Barringer, Charlotte, NC)

RHODE ISLAND SECTION
Sept 15 (Management Meeting); Oct 17 (Dinner Meeting); Dec 1 (Annual Business Meeting)

SOUTH CENTRAL SECTION
Sept (Hotel Patten—tentative)

SOUTHEASTERN SECTION
Sept 9 (Ida Cason Gardens, Pine Mountain, Ga); Nov 25 (Atlanta Athletic Club, Atlanta, Ga)

WESTERN NEW ENGLAND SECTION
Sept 15 (Plant visitation); Oct 27 (Annual Meeting) Dec 1 (Shelton, Conn)

"International Textile Technology—Key to Progress"

STATLER-HILTON HOTEL TO WELCOME '61 AATCC CONVENTIONEERS

THE Statler-Hilton Hotel, official convention hotel for AATCC's 1961 Convention, which will be held in Buffalo, NY, Sept 27-29 with the Niagara Frontier Section as host, reportedly has set aside twice as many rooms as other hotels have done at previous conventions. Practically everyone who desires may stay at the headquarters hotel. There is free parking and the hotel does not require a deposit.

Some of the headquarters hotel's facilities are pictured below:

Front view, Statler Hilton Hotel, Buffalo, NY

Golden Ballroom

Georgian Room

New York Room

Studio-type bedroom

Twin bedroom connecting to a parlor suite

Activities of the Local Sections

Hudson-Mohawk

HUDSON-MOHAWK Section's eighth annual ladies night affair was held May 12 at the Chelsea House, Tribes Hill, NY, the highlight of which was the presentation of the Dr Jack Epelberg Memorial Award to John J Hanlon, technical director, Mohasco Industries, Inc.

A social hour of dancing followed. Movies of previous outings were shown by Harold Simon, General Aniline & Film Corp.

John J Hanlon (right), Mohasco Industries, receives Jack Epelberg Award from William A Nelson, chairman.

HUDSON-MOHAWK SECTION LADIES NIGHT • TRIBES HILL, NY • MAY 12, 1961

Southeastern

SOUTHEASTERN SECTION designated its 12th annual outing, held June 9-11 at Radium Springs, Ga, the "Civil War Centennial Outing". Nearly 300 members, wives, and friends were present for the festivities.

Costumes of the Civil War Era were in fashion and added vivid color and interest to the occasion. The Friday night program was conducted by a South Carolina swamp fox, along with a wild and wooly collection of assorted rebels and carpetbaggers. Genuine confederate money was issued to all people attending the party, and many gambling prizes, such as carpets, towels, sheets, piece goods, and other textile products, donated by various mills in the area, were sold at auction. Elwood Barbre performed as auctioneer. Confederate money, of course, was used in the purchase of these gifts.

On Friday afternoon, Fred Missildine, Winchester Arms Division, Olin Mathieson Chemical Corp, gave a one-hour demonstration and instruction period on skeet and trapshooting. Mr Missildine is world professional skeet champ and captain of the All-American Skeet Team.

In the trapshoot competition, Jim Jordan, Pepperell Mfg Co, won the championship.

On Saturday, Elwood Barbre, Pepperell Mfg Co, won the bait-casting contest. Hyram Jackson, Morton Salt Co, won the horseshoe singles championship; and the doubles competition was won by Phil Carlson, Nopco Chemical Co, and Charles Adam, A E Staley Mfg Co.

Spot Brown, Reeves Brothers, Inc, and Jim Stephenson, Barwick Mills, tied for low gross in the golf tournament with scores of 78. Frank Hull won the suppliers division golf prize with a 79. The blind bogey was captured by Bo Bozeman, Russell Mfg Co.

During the various competitive events, all ladies present were entertained at bridge and canasta parties.

Albert Murphy and his Moultrie Mudcats played for the group at an informal dance following the banquet and cocktail party, on Saturday night.

Sunday morning, Carl Caldwell, manager of Radium Springs, presented his usual complimentary breakfast to all guests of the outing.

General chairman for the outing was Frank Cooper, Wunda-Weve Carpet Co. He was assisted by Dave Meriwether, Seydel-Woolley & Co, and the following committee chairmen: *Finance*, George Fogle, Lowell Bleachery; *Entertainment*, Dick Jones, Chemical Services; *Registration*, Bill and Lillian Williams, Tennessee Corp; *Ladies' Entertainment*, Marion and Booker Tatum, American Cyanamid Co; *Dance*, Spot Brown, Reeves Brothers; *Bait Casting*, Bill Griffin, Dexter Chemical Corp; *Refreshments*, Ted Burgess Emery Industries; *Golf*, Roger Dickinson, Coats & Clark; *Mill Prizes*, Hyram Jackson, Morton Salt Co; *Trapshoot*, Claude Suttle, Southern States Chemical Co; *Horseshoes*, Francis Minich, Metro Atlantic; *Photography*, George Dockray, Textile Industries; *Civil War Centennial Party*, Ralph Taylor, Charles S Tanner Co; *Southeastern Section Chairman*, Bill Amos, Jefferson Mills.

While a marvelous time reportedly was had by all, the main function of the outing was to raise funds to support the section's scholarship program. The financial success of this outing is said to have insured the continuation of this worthwhile project.

Hariette and Ed Shlirf, National Aniline

SOUTHEASTERN SECTION OUTING

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RADIUM SPRINGS, GA

•

JUNE 9-11, 1961

Dave Meriwether, Seydel-Woolley & Co, outing cochairman; Mrs W F Ziegler

Mr & Mrs Frank Hirsch, Procter & Gamble Distributing Co

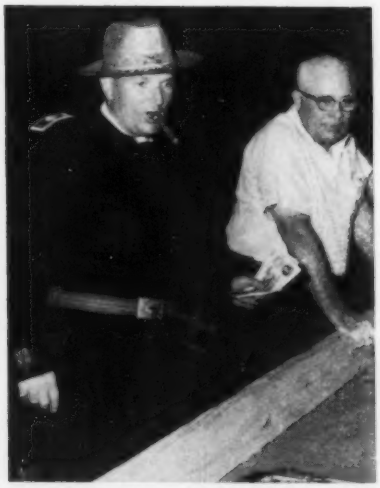
Gladys and Roger Dickinson, Coats and Clark

Jim Buckner, Muscogee Mfg Co; Doris Smith

Betty and Dick Jones, Chemical Services

George Dockray, Textile Industries; Mrs Dockray

Dee and Jim Bruckner, Muscogee Mfg Co



Joe Richardson, Russell Mfg Co; Cliff Smith, Osco Chemical Co

L to r: Al Morse, Coats & Clark; Gillespie Smith, American Cyanamid; Bill Amos, Jefferson Mills. Seated: Jan Smith

Mr & Mrs Frank Cooper, Wunda Weve Carpet Co, outing chairman

L to r: Dick Jones, Royce; Bo Bozeman, Russell Mfg Co; Booker Tatum, American Cyanamid; Joe Richardson, Russell Mfg Co; Bill Fayssoux, Royce

L to r: Ken Miller, Augusta Chemical; Ted Burgess, Emery Industries; Carl Blumenstein, Seydel-Woolley & Co; Nesbit Johnson, Geigy

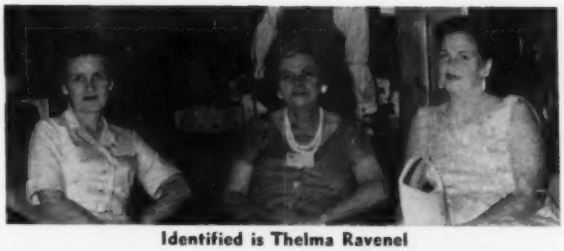
Identified are Ken Makant, Coats & Clark, and Bill Pierson

Identified are Jean and Justus Bellville, Diamond Alkali

L to r: Aileen Smith (Mrs Cliff); Clara Amos (Mrs Bill); Jan Smith (Mrs Gillie); Elwood Barbre, Pepperell; Cliff Smith, Osco Chemical

L to r: Mrs G O Smith; Dick Jones, Chemical Services, Inc; Frank Cooper, Wunda Weve Carpet Co; Steve Driggers, Mayo Chemical Co

Identified are Cliff Smith, Osco Chemical; Elwood Barbre, Pepperell Mfg Co; and Henry Black, Tennessee Corp



Identified is Thelma Ravenel

Frances and Elwood Barbre, Pepperell

Mr & Mrs Lewis Kirby, American Cyanamid

Bill Macke, Mayo Chemical Co

Flo and Fred Ziegler, Swift Mfg Co

L to r: Ben Jackson, Dixie Size & Chem; Bob Price, Pepperell; Howard McCamy, Dixie Size

WESTERN NEW ENGLAND SECTION OUTING

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WALLINGFORD, CONN

•

JUNE 9, 1961

PLAN TO ATTEND THE 1961 NATIONAL CONVENTION AND COMMEMORATE THE AATCC'S 40th ANNIVERSARY

THE Niagara Frontier Section, sponsoring the 1961 National Convention, has planned a special program honoring all living charter members. They have been invited to attend as guests of the 1961 Convention Committee.

A technical program covering a wide area of the textile industry will be presented. An added attraction will be a special demonstration by the United States Dept of the Interior's Bureau of Mines Section on the "Hazard of Static Electricity."

The Exhibit is well advanced. The Ladies Committee has arranged an interesting program including a tour of the historic Niagara Frontier. Two luncheons are included in the Ladies Program, one in Canada on the tour and the other at the Statler-Hilton Hotel which will be the closing event on the Ladies Program.

Employment Register

This column is open for two insertions per year, per member, without charge. Blanks may be obtained from, and filed with, the secretary of the Association, Post Office Box 28, Lowell, Mass. It is understood that these will be open to inspection by prospective employers who can obtain further information from the secretary.

61-16

Education: BS, Clemson College.

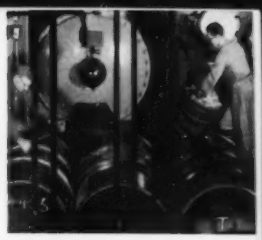
Position desired: 1)Development work; 2) technical sales; 3) management and liaison duties. No commission selling. Interest not limited to textile industry. Enjoy reasonable travel.

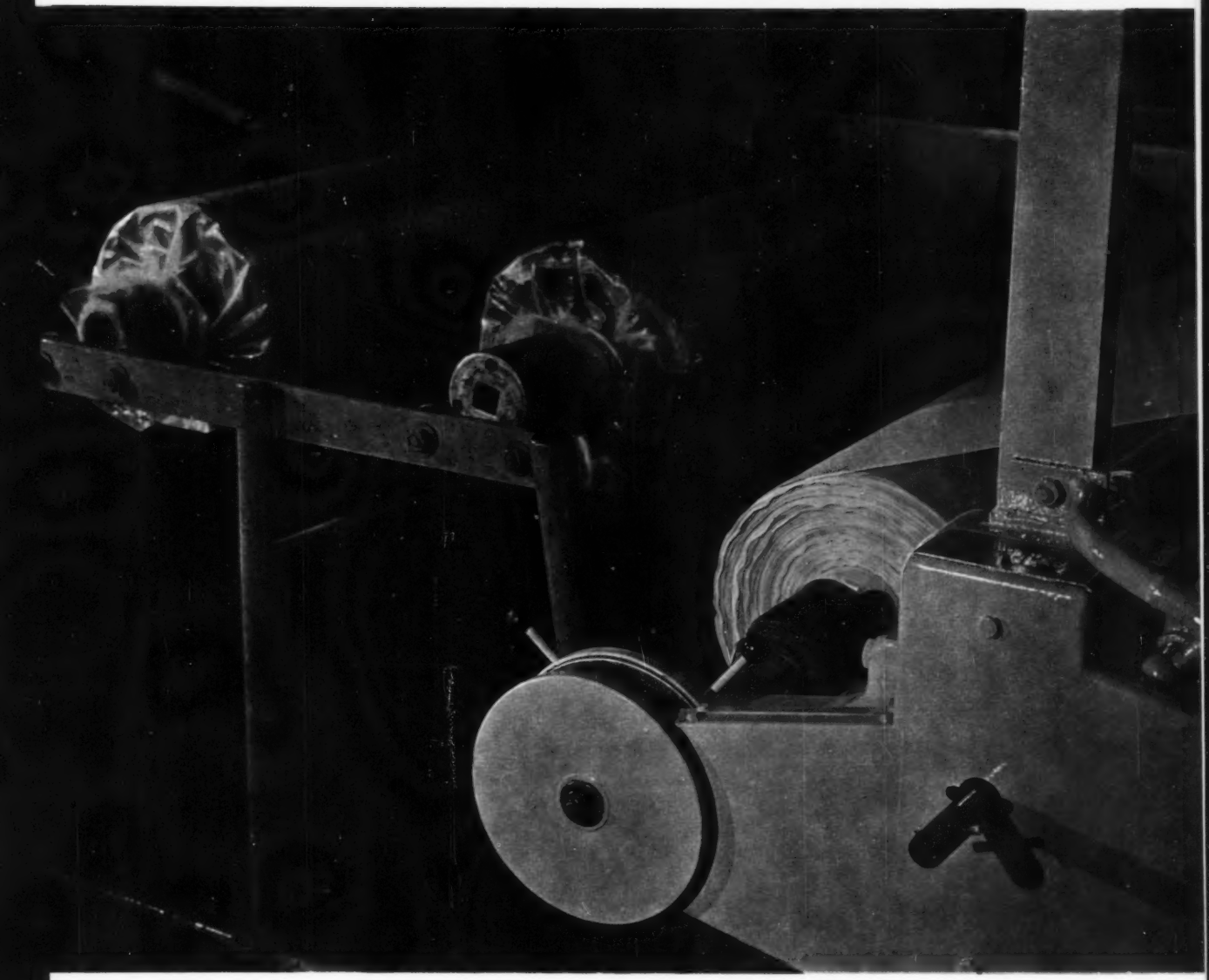
Location: Any state having no income or intangibles tax, as NJ etc, desired. Any state or country having reasonably healthy living conditions acceptable.

Age: 54; married; excellent references.

7-24,8-7

CIBA





Cibacron Cold® Pad-Batch Technique

Economy, simplicity, high quality and trouble-free working are the salient factors of the new Cibacron cold pad-batch dyeing techniques. The padding liquor shows good stability despite the fact that it contains alkali. A high degree of fixation is achieved when the goods are batched up at room temperature. Penetration and leveling are excellent. Reproducibility from batch to batch is good, and unfixed color is easy to wash off. The cold pad-batch technique has all these attributes to offer, plus Cibacron-fastness.

●Registered trade-mark

albatex POK

UNIQUE
OUTSTANDING
EXCELLENT

Leveling and penetrating agent...a highly efficient anionic for use with vat, direct, chlorantine, acetate, sulphur, union and developed dyes.

Amid the confusion of claims and counterclaims surrounding many advertised products the words unique, outstanding and excellent seem frequently to lose their meaning.

Yet to describe Albatex POK properly these words do apply.

Albatex POK is *unique* because it is both a leveling and penetrating agent. It is *outstanding* because of its versatility. It can be used for dyeing cotton, rayon, acetate, nylon, and blends of all four. And it works equally well with these fabrics on raw stock, skeins, packages, beams, piece goods and hosiery. It is *excellent* because of its superiority in performing these functions.

In addition Albatex POK is an *excellent* stripping and leveling agent in the correction of faulty vat dyeings, and can be used in boil-off of fabrics as pre-treatment to dyeing and finishing. Albatex POK has *outstanding* stability in high concentrations of caustic and hydrosulfite.

Technical bulletin available, of course, from Ciba Company, Inc., Chemical Specialties Division, Fair Lawn, N. J.

C I B A

for permanent mothproofing

Wool yarn, blankets, rugs, suitings treated with Hartocide are protected against the damaging effects of moths and carpet beetle larva for the *life of the garment.*

The protection, achieved *at very low cost,* is applied directly in the dye bath, and remains through laundering, dry cleaning and all normal use conditions.

Wool articles properly treated with Hartocide exceed ASTM requirements for permanent mothproofing.

Write for an appointment with our Technical Director for a trial run and prove to yourself how economically you can add the *plus* of permanent mothproofing to your goods.

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GAFAC® RE-610 wetting agent with CHEELOX® B-13 sequestrant

can cut rejects 50% or more in continuous bleaching of cotton goods

Individually excellent as a wetting agent and a sequestrant, respectively, GAFAC RE-610 and CHEELOX B-13 are more than doubly efficient when used together. Their synergistic effect dramatically improves control over iron and other metallic ions in the caustic-boil and bleaching stages of continuous cotton processing. Mill tests credit the "Gafac-Cheelox" team with reducing rejects owing to iron-speck holes by more than 50% on large runs.

GAFAC RE-610 phosphate ester is a new 100%-active anionic surfactant offering a unique combination of properties in high concentration of alkali: good solubility, chemical stability, and oil- and wax-emulsifying ability—even at the boil. Good rinsability too—though residual amounts in the goods will not interfere with dyeing.

GAFAC RE-610 and other GAFAC surfactants are effective at various other stages in the processing of cellulosic and synthetic-fiber yarns, piece goods, and hosiery. Write for data sheet TA-63 entitled "GAFAC Surfactants in Textile Processing."

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ADR News Report:

General News of the Industry
Personalities in the News
New Products, Developments, Processes

12th National Conference on Standards

Methods whereby companies may apply the philosophy and practices of standardization to reduce production costs and increase profit will be brought into focus at the 12th National Conference on Standards to be held October 10-12 in Houston, Texas.

Sponsored by the American Standards Association, the conference will be designed to afford industry the opportunity of assessing current standards work in terms of immediate and long-range goals, application of standards in reducing costs in many areas and the financial benefits to the company from standards application. Attendance is open to all organizations and individuals, whether or not they be members of the ASA.

John R Townsend, president of the ASA, will officiate at the opening session on the morning of October 10. The conference keynote speaker will be Donald J Hardenbrook, national vice president of the National Association of Manufacturers and board chairman of the American Creosoting Corporation. The welcome address will be given by Albert Thomas, congressman from Houston's Eighth District.

In response to requests from industry, the second of eight conference sessions will be devoted to a comprehensive review of standardization at all levels of the economy and in the international field.

Convening the afternoon of October 10, the session will initially deal with standards work in the company, trade association, technical society, government and the American Standards Association. The work of the International Organization for Standardization, International Electrotechnical Commission, Pan American Standards Committee and the American-British-Canadian Engineering Unification Conference will also be discussed.

Application of standards in the fields of plastics, material handling, safety, purchasing, data processing and mobile homes will be discussed during conference sessions of October 11 and 12.

Two gold medals awarded annually by the ASA for outstanding support of voluntary standardization and devoted service to standardization, the Howard Coonley and Standards Medals, will be presented during an awards luncheon on October 11. Guest speaker at the luncheon will be Vice Admiral W F Raborn, USN, chief of the Polaris program.

Attendance at the national conference and its eight sessions is open to all companies, trade associations, technical societies, and government departments and agencies interested in standards work. The national program chairman is H C Ball of Humble Oil & Refining Co, Baytown, Texas. Information concerning the program of activities and registration blanks may be obtained from the American Standards Association, 10 East 40th St, New York 16, NY.

●

ASME's Textile Engineering Div to Hold Annual Meeting at MIT

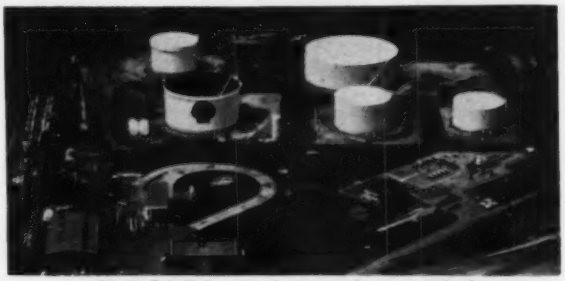
The Textile Engineering Division of the American Society of Mechanical Engineers will hold its annual meeting at the Massachusetts Institute of Technology, Cambridge, Mass, November 1-2. The conference will be sponsored jointly by Lowell Technological Institute and MIT. Prof Elliot B Grover, head of the department of yarn technology in the School of Textiles at North Carolina State College, is chairman of the Division.

The Spring meeting of the Textile Engineering Division will be held at North Carolina State College on April 11-13, 1962. The Fiber Society, Inc, will also meet in connection with the Division's session.

●

Shell Chemical Building Hydrogen Peroxide Bulk Storage Facilities Near Charlotte

Work has begun on hydrogen peroxide bulk storage facilities near Charlotte, NC, which will enable Shell Chemical Co to provide faster tank-truck service to the textile, paper and furniture industries in the southeastern states, particularly the Carolinas, Georgia and Virginia.



Shell Oil Co's petroleum products terminal on the Plantation Pipe Line near Charlotte, NC

The new facilities are being constructed adjoining Shell Oil Company's petroleum products terminal on the Plantation Pipe Line. Tank-truck deliveries of hydrogen peroxide from the new installation are expected to begin within a month.

Since it initiated tank-truck service in the area a year ago, Shell Chemical has been making deliveries direct from its hydrogen peroxide plant at Norco, La. This has developed to the degree that it enables Shell Chemical to make this further commitment to the textile industry and other hydrogen peroxide users in the South, a company official states.

●

Butterworth Named US Sales Agent for Kleinewefers

H W Butterworth & Sons Co, Bethayres, Pa, has been named U S sales agent for textile finishing machinery manufactured by Joh Kleinewefers & Sohne, Krefeld, Germany.

Stanley Brooks, executive vice president, announced that Butterworth will import the basic machines, and add instrumentation and electrical drive equipment. The Butterworth service organization will be responsible for maintenance and parts.

Kleinewefers equipment includes printing, mercerizing, calendering and embossing machines.

A new roller-type printing machine, with pneumatic pressure nips and a patented method of pattern register is one of the outstanding machines in the Kleinewefers line. It is available for one- to 14-color printing, and in one- and two-color laboratory machines. A complete line of auxiliary printing equipment is also provided.

Kleinewefers chainless mercerizing ranges, hank mercerizing machines, a complete line of calenders, and other machines for the finishing trade will also be in demand in the U S market, Mr Brooks believes.

Kleinewefers technical representatives will work closely with Butterworth engineering and sales personnel.

Delivery schedules are now being set up. Mr Brooks will visit Germany to complete the sales arrangements.

Plans are also being made for Butterworth to handle sales of Kleinewefers machines for the paper and plastics industry, including auxiliary equipment.

●

Nuodex Appoints Amica Div of F H Ross & Co Agents

Amica Division, F H Ross & Co, has been appointed by Nuodex Products Div, Heyden Newport Chemical Corp, Elizabeth, NJ, to serve as the Nuodex representative to the protective coatings industry in Southern Florida. This appointment became effective August 1.

The Amica Division is located at 200 NE 181st Street, North Miami Beach 62, Fla, and has warehouse stocks at the same address. Frank V Allen, branch manager, and his sales staff of two men, will handle the Nuodex line for Amica in this territory.

R T Hopkins Co, Atlanta, Ga, will continue to represent Nuodex in South Carolina, Georgia, Alabama, and the northern and central sections of Florida.

ANOTHER LeaTex PRODUCT

"Always Reliable"

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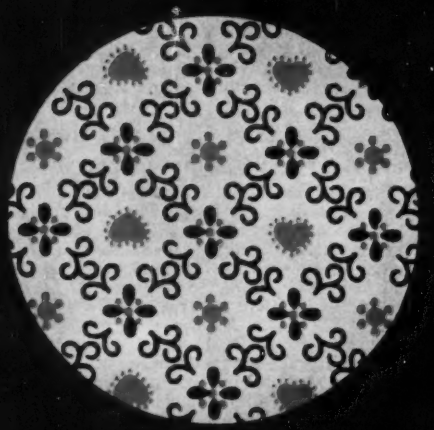
THE FULL-RANGE

Finish



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Interchemical de Mexico, SA, a subsidiary of Interchemical Corporation, recently opened a brand-new plant in the Mexico City suburb of San Pedro Xalostoc. With 40,000 square feet of working space, the plant features the modern equipment used in Interchemical units in the United States. Interchemical de Mexico, managed by Ohmer Rorem and staffed by Mexican personnel, is a leading manufacturer of textile colors, printing inks and industrial finishes.

●

Textile Sales & Service Co Named A-C Distributor and Agency

Textile Sales & Service Co, 425 High Brook Dr, NE, Atlanta, Ga has been named a distributor and agency for various Allis-Chalmers Industries Group products.

Established in May, 1961, Textile Sales & Service Co will serve as a distributor for Allis-Chalmers motors, control, vacuum and centrifugal pumps, transformers and rotary compressors.

In addition, the company will be an agency for Allis-Chalmers switchgear and unit substations.

Textile Sales & Service Company will serve the textile industry on these products in Georgia and that portion of South Carolina covered by Allis-Chalmers Atlanta district office.

R J Jennings is president of Textile Sales & Service Co.

●

CPWC Names New Ad Agency

Cranston Print Works Co, fabric printers and finishers, has appointed Donahue & Coe, Inc as its advertising agency.

●

G-E Silicone Products Dept Opens Sales Office in Dayton

The Silicone Products Department of General Electric has opened a new sales office in Dayton, O, at 11 West Monument Street. The telephone number is BAldwin 3-1263. James Hamlin, the sales representative in charge, formerly was located in the Company's Cleveland district headquarters office.

The General Electric Silicone Products Department manufactures silicone rubber compounds, resins, fluids, emulsions and specialty products as well as silicone intermediate chemicals. The manufacturing, research and marketing facilities for General Electric silicones are located at Waterford, NY.

●

American Seat Belt Council Formed

At a recent meeting at O'Hare Inn, Des Plaines, Ill, approval was given to formation of a new organization, to be known as the American Seat Belt Council. The new group will function as an auxiliary organization of the Narrow Fabrics Institute and will be under the management of Penn Affiliates, Inc. Charter members include the leading manufacturers of automotive seat belts and manufacturers of component parts therefor, including webbing, hardware, yarn, etc.

The ASBC was created to lend support to such public interest groups as the National Safety Council, Advertising Council, U S Public Health Service, American Medical Association and General Federation of Women's Clubs, in their efforts to increase use of seat belts by the public as an effective tool for reducing accident fatalities and injuries. This will be done through development of a program of voluntary self regulation to insure that belts offered for sale to the consumer meet minimum recommended standards.

Committees will be established by ASBC to cooperate with other organizations and agencies in the promulgation of standards. In this regard, one of the first actions taken by ASBC was to adopt the SAE Recommended Practice covering Motor-Vehicle Seat Belt Assemblies.

PERSONALITIES IN THE NEWS

Dingee

Harold W Dingee, vice president & sales manager, Harshaw Chemical Co, has retired after a 46-year career in the dyestuff industry.

Mr Dingee was recently honored with a gold wrist watch at a luncheon at the Wool Club in New York, which was attended by 32 business associates from various concerns in the industry.

Mr Dingee entered the dyestuff industry in 1915 and was connected with Swiss Colours Company, which later became known as American Aniline Products, before its absorption by Koppers Co, Inc. In 1917 he left this concern and joined forces with the Federal Dyestuff & Chemical Corp, Kingsport, Tenn, as assistant to the sales manager in the dyestuff division. After the dissolution of this company, he entered the chemical-distributing field with Marsden-Sewell Corp.

In 1922, Mr Dingee joined the sales organization of Zinsser & Co, Hastings-on-Hudson, NY, manufacturers of dyestuffs and fine chemicals. In 1933 he was appointed vice president and sales manager as well as director of the Company. After the absorption of Zinsser & Company in 1955 by the Harshaw Chemical Co, Cleveland, O, he continued in those duties until his retirement.

Mr Dingee is a graduate of Pratt Institute, Brooklyn, NY. He was elected president of his class in his senior year.

He is a past director of the Synthetic Organic Chemical Manufacturers Association and is now serving on its Customs Committee. He is also a member of the American Association of Textile Chemists & Colorists and the Drysalters Club of New England.

Among his outside activities, Mr Dingee is a governor of the Wool Club, is past president and director of the Wykagyl Park Association, and vice president and director of the City Affairs Committee in New Rochelle, NY. He is a member of the Hudson River Golf Club, Yonkers, NY, and the South Fork Country Club, Amagansett, NY, and a director in the North Haven Association in North Haven, NY. He is also a thirty-second-degree shriner and a life member of the Elks Club.

During World War II, Mr Dingee was a member of the Industry Advisory Committee of the War Production Board.

His future plans are uncertain but he expects to spend considerable time at his home in North Haven, Sag Harbor, NY, doing a little fishing and farming.

●

McCann

Eastern Color & Chemical Co, Providence, RI has announced the appointment of *Matthew M McCann* as technical service and sales representative.

In his new assignment, Mr McCann will service Southern textile plants and make his headquarters in Burlington, NC.

Mr McCann was formerly with Sayles Finishing Co, Providence, RI.

Hardy

Aquadro

Burt

Speed

Hyatt

Brunson

Arnold, Hoffman & Co, Inc has announced the appointment of *Thomas W Hardy* to its sales staff. He will service textile dyeing and finishing plants in the New England area, working from the company's Northern sales department.

Prior to this appointment, Mr Hardy spent several years in the employ of American Cyanamid Co, where he had been engaged at different times in technical service and in sales in that company's Calco and Chemical Products divisions.

●

Interchemical Corp has announced the appointment of *Edward Aquadro* to the newly created post of process engineer. In his new assignment, Mr Aquadro will study the equipment and methods in Interchemical plants on a companywide basis. He will investigate and report on new process equipment, new methods of manufacture and materials handling equipment. He will also be active in the areas of air- and water-pollution control, and in the evaluation of plant safety procedures.

Mr Aquadro's fifteen years with Interchemical have included positions as plant engineer and project engineer with the Color & Chemicals Division. He was plant manager of the former Cotan Division before accepting his new assignment.

●

On Saturday evening, June 15, over 120 guests assembled to honor *A Moody Burt* for 50 years of service to the textile industry. *Leon E Moody*, executive vice president and general manager of Putnam Chemical Corp, was host at the affair given at the Sedgefield Inn in Greensboro, NC.

In 1911, Mr Burt was graduated from Georgia Tech with a BS in textile engineering. He served his apprenticeship with End Cotton Mills in Hillsboro, NC. His selling experience began with the Berlin Aniline Works in the days when it was customary to travel by train to the nearest station, with the visit to the mill made in a horse and buggy. A horse and buggy was sent to bring Mr Burt to the party. It is believed that he was pleased to be allowed to drive home after the party in a modern automobile.

Most of Moody Burt's experience was acquired in North Carolina, although some time was spent in the New York market, and in Philadelphia as manager of the Middle Atlantic States for the Celanese Corporation of America, shortly after rayon was introduced in this country.

Mr Burt married the former Ruby Haskins Ellis of Kentucky and has one son, the Reverend A Moody Burt III, who now serves as Episcopal Minister in Raleigh, NC.

In presenting Mr Burt with a gold watch, Mr Moody divulged that Mr Burt had recommended Charlotte, NC, as the new headquarters for Putnam's operations, and had even selected the site on which building is now under way.

●

Lester E Francis, director of advertising for Emery Industries for the past 18 years, has announced his retirement.

Mr Francis, who directed Emery advertising for both its Chemical Division and the Sanitone Drycleaning Division, was active in a wide range of trade association work. He served on the board of the Laundry and Cleaners Allied Trades Association, and on the Advertising Committee of the Soap and Glycerine Producers Association.

With a Master of Science degree in Chemical Engineering from the University of Cincinnati, Mr Francis joined Emery's Chemical Division in 1927.

In 1932, when the Sanitone Division was formed he became Emery's first sales engineer, covering the entire United States and Canada. In 1939, he became sales manager of the Sanitone Division.

In 1943, when Emery formed an advertising department to promote all company products, Mr Francis was named its director.

John J Speed has been named manager of special projects, a new position in The Chemical Group of General Aniline & Film Corp. Mr Speed will report to *Harold G Shelton*, GAF vice president in charge of The Chemical Group, which consists of the Antara Chemicals, General Dyestuff Company, and Collway Pigments Divisions. The appointment was effective July 1.

Mr Speed will be charged with the direction of special projects for the group vice president.

●

Robert C Hyatt has been appointed director of marketing, Antara Chemicals, a Division of General Aniline & Film Corp. In his new position, Mr Hyatt succeeds *James M Cloney*, who has been named general manager of the corporation's Ozalid Division.

Mr Hyatt moves up from the post of director of marketing of the corporation's Collway Pigments Division, a position to which he was appointed this past November. He will now be charged with responsibility for all marketing activities of the Antara Chemicals Division, and will maintain his headquarters at 435 Hudson St, New York.

William C Brunson has been named midwest regional sales manager for Antara Chemicals, succeeding *G A Brost*, who was appointed to the position of product manager—intermediates in June. He will be responsible for the sales of all Antara's chemical products in the midwest area of the the US extending from North Dakota to Texas.

Mr Brunson joined Antara in 1956 and has served as sales engineer in the Atlanta, Ga, and northern New Jersey areas.

Raymond F Welter has been appointed to the new position of district manager of a newly created southwestern district office for Antara Chemicals, which will be located at 3939 Essex Lane, Houston 6, and will cover Mississippi, Louisiana, Oklahoma, and Texas.

Mr Welter joined Antara in 1953 as a sales engineer in New York, covering various sales territories from there. He moved to Houston in 1959 as a sales engineer for that area.

Additional staff to be attached to the new Houston office are: *Steven J Stolton*, sales engineer, Houston and *Jeal Sugarman*, sales engineer, Dallas.

Products sold through the new District Office will include acetylene derivatives, surfactants, organic chemicals, heavy chemicals and specialty products.

●

Gordon Thruston, a sales representative for Jacques Wolf & Co in the Carolinas and Georgia for five years, has joined Hart Products Corp, for whom he will serve as a sales representative in South Carolina and parts of Georgia. Mr Thruston will continue to reside in Greenville, SC.

●

Clemson College has announced the recipients of three scholarships.

Robert M Teague, Clemson senior majoring in electrical engineering, has been named to receive the second installment of the Burlington Industries Foundation Scholarship, a $500 prize awarded by the College.

Russell H Lawrimore, a junior majoring in textile management, is the winner of a Sonoco Scholarship, one of two $500 awards given annually by the Sonoco Company to undergraduates majoring in textiles. The award is presented by Clemson's School of Textiles.

LaFrance Industries, Inc, under a new scholarship plan, has named *Michael L Lee* the recipient of its first award. Mr Lee is employed by LaFrance's Pendleton Mfg Co division. The LaFrance award is a $600 scholarship to Clemson's School of Textiles. It will be awarded by the company each year to some deserving employee or son of an employee. If no one meets these qualifications, applications from members of the graduating class of Pendleton, SC, High School will be considered.

Binns

Strahley

Graham

Maclaren

Simser

Anderson

Melbourne P Binns has been named Atlanta regional manager of the Industrial Chemicals Division, Pennsalt Chemicals Corp. He succeeds *Robert W Wurst*, recently deceased.

Mr Binns moves to this new post from that of product manager, organic chemicals.

He will be located at the firm's Atlanta plant and will be responsible for organic and inorganic sales throughout seven southeastern states.

●

Robert F Strahley has been appointed assistant division manager of the Franklin Process Co, a division of Indian Head Mills, Inc.

In his newly created position, Mr Strahley will be in charge of operations of the Franklin Process Company's three plants at Greenville and Fingerville, SC, and Chattanooga, Tenn. A large-scale program of expansion and modernization of these plants has recently been completed.

Franklin Process Company is a leading producer of package-dyed yarns, with an annual capacity of more than 30 million pounds.

Mr Strahley will continue to maintain his headquarters at Chattanooga, where he has been plant manager since 1952.

●

Robert T Graham has been made the new director of research for the National Institute of Drycleaning. He succeeds *Joseph R Wiebush*, who has held this position for the past five years. Dr Wiebush is leaving NID to become an associate professor of chemistry at the US Naval Academy.

Mr Graham has been with NID since January 1951. He introduced many of the scientific procedures now used in garment analysis and has developed laboratory drycleaning performance tests for most of the fabrics now on the market. He is a past secretary and vice chairman of the Washington Section, AATCC. For the past seven years Mr Graham has been NID's supervisor of textile and product testing.

●

Joseph W Schinzing has been named sales representative in the Midwest area for the Chemicals & Plastics Division of FMC Corp.

Before joining FMC, Mr Schinzing was a sales representative for Rez Wood Tone, Inc and earlier was associated with Monsanto Chemical Company.

In his new assignment, Mr Schinzing will make his office at 440 East Jackson Rd, Webster Groves 19, Mo.

●

The election of the new national officers for the American Society for Testing Materials was announced at the President's Luncheon, Chalfonte-Haddon Hall, during the recent 64th Annual Meeting of the Society in Atlantic City, NJ.

Miles N Clair, president, The Thompson & Lichtner Co, Inc, was elected president of ASTM to serve for a one-year term.

Alfred C Webber, assistant to the laboratory director, Research and Development Division of the Polychemicals Department, E I duPont de Nemours and Co, Inc, was elected vice president. *R Wade Seniff*, manager of research, The Baltimore and Ohio Railroad Co, will continue as senior vice president.

New members of the board of directors elected for three-year terms were: *Ardrey M Bounds*, Superior Tube Co; *Albert G H Dietz*, Massachusetts Institute of Technology; *Bruce W Gonser*, Battelle Memorial Institute; *Wayne A Kirklin*, Analytical Division, Hercules Powder Co; *Gordon M Kline*, Organic and Fibrous Materials Division, National Bureau of Standards; and *James B Rather Jr*, Socony Mobil Oil Co, Inc.

Penick & Ford, Ltd, Inc has announced the following organizational changes in the Corn Refining Division:

S F M Maclaren has been appointed to the position of eastern sales manager, replacing *W S Russell*, who has been promoted to assistant to the vice president. Mr Maclaren's most recent assignment with Penick & Ford was district sales manager.

L S Simser has been appointed to the position of western sales manager, replacing *L S Poer*, who has been promoted to vice president and director of marketing. Mr Simser's most recent assignment was district sales manager.

G M Anderson has been named southern sales manager, replacing *P G Wear*, who will retire January 1. Mr Anderson most recently has been assistant southern sales manager.

●

Cameron A Baker, director of research and development, Better Fabrics Testing Bureau, Inc, New York, NY, was recently elected to the New York District Council of the American Society for Testing Materials.

The District Councils of ASTM are intended to provide a means of advancing the interests of the Society in a given locality and of furthering the purposes for which the Society is organized, namely: "Promotion of Knowledge of Materials of Engineering, and Standardization of Specifications and Methods of Testing".

Mr Baker serves as chairman of Subcommittee C-4 of the ASTM Committee on Textile Materials.

●

Irving Fischer has been appointed manager of the newly expanded Mid-Atlantic Division, National Starch and Chemical Corporation, succeeding *Jack Snyder*, who passed away June 14.

Mr Fischer's broad experience in adhesive technical service as a salesman for the company in the New York and Baltimore areas, and as district sales manager in the New York metropolitan area qualifies him for his new responsibilities. He will make his headquarters at the Mid-Atlantic Division offices, 3701 No Broad Street, Philadelphia, and will move shortly to the Philadelphia area.

●

Several scholarship winners for the 1961-62 academic year have been announced by the North Carolina State College School of Textiles as follows:

Bobby Franklin Mayse—$500 Ciba Company Scholarship

Reid Alexander McCarter, *Thomas E Harrison*, and *Kenneth L Huggins*—$350 United States Rubber Company Scholarships

Harry O DeLoach—$450 Geigy Dyestuff Scholarship

David Charles Gagnon—$500 Owens-Corning Fiberglas Corp Scholarship

Paul A Tucker Jr—$500 Chemstrand Corp Scholarship

James Riley Groome—$500 Carter Foundation Scholarship

Michael Smith Scofield and *George Robert Johnson*—$500 North Carolina Textile Foundation Scholarships

Lynda Louise Smith, *James Reid Lisk*, and *Johnny Dale Shelton*—$750 Dickson Foundation, Inc Scholarships

William James Burgess, *Phillip Thomas Nordon*, and *Bernice Ray Farmer*—$500 Herman Cone Family Foundation Scholarships.

Mr Mayse, a senior, and Mr Huggins, a sophomore, are majoring in textile chemistry.

Messrs Harrison and Farmer, seniors; Gagnon, Tucker, McCarter, and Nordon, juniors; and Burgess, sophomore, are textile technology majors.

Mr DeLoach, who will enroll in the textile chemistry curriculum; Messrs Groome, Scofield, Johnson, Lisk and Shelton; and Miss Smith will enter the School of Textiles this fall.

Killinger

Poer

Brouillard

Russell

Knight

Ammerman

Penick & Ford, Ltd, Inc, has announced the following executive changes in the Corn Refining Division. These changes became effective July 1.

J E Killinger has been promoted to the position of vice president—product application and development, a new division of the company. Dr Killinger joined Penick & Ford in 1931 as a chemist. Since that time he has held numerous management and executive positions, the most recent being vice president and director of technical sales service and field development.

In his new position, Dr Killinger will have total responsibility for development of new areas of application of new and existing products.

L S Poer has been promoted to vice president and director of marketing for the food industries and allied trades. Since 1945 he has held various management positions, the most recent being western sales manager.

R E Brouillard is now vice president and director of marketing for the paper and textile industries. Dr Brouillard joined Penick & Ford in 1960 as assistant to the vice president. Prior to joining Penick & Ford he was associated with General Aniline & Film Corp as sales manager of the Pigment Division.

W S Russell is now assistant to the vice president. Mr Russell's most recent position with Penick & Ford was eastern sales manager.

●

Michigan Chemical Corp, St Louis, Mich, has appointed *George J Coleman Jr* product manager, industrial chemical sales. In this capacity he will be responsible for the sale and marketing of the company's groups of products comprising bromine, organic bromides, flameproofers, and fine chemicals.

Mr Coleman was formerly assistant product manager with Merck & Co, Inc, Rahway, NJ. He joined Michigan Chemical in December, 1960 in a sales capacity.

Mr Coleman will continue to reside in Westfield, NJ and to maintain his headquarters in the company's New York office at 230 Park Ave.

●

Charles D McCleary has been appointed director of research and development for the Naugatuck Chemical division, United States Rubber Co. He will reside in Naugatuck, Conn, where the division's main research facilities are located.

Dr McCleary, formerly assistant director, replaces *Wesley S Coe*, who has just been elected managing director of Petroquimica, SA (PASA). PASA was recently formed by five companies, including US Rubber, to build a large petrochemical complex in Argentina.

In his new post, Dr McCleary will head a research and development staff of over 300 scientists working in the division's laboratories or pilot plants in Naugatuck, Conn, Baton Rouge, La, Painesville, O, and Bethany, Conn.

●

Four supervisory promotions in the Research and Development division of the A E Staley Mfg Co, Decatur, Ill, have been announced.

H M Walton, formerly with the exploratory group and for the last six months a member of the polymer group, has been appointed research associate.

John A Wagoner has been promoted to group leader to supervise the physical chemistry group. Before this promotion he was a senior research chemist.

R M Powers, promoted to head of a newly created laboratory of instrumental analysis, joined Staley's in 1958 as a research chemist in the chemical research department.

K M Brobst, appointed head of the analytical laboratory, was formerly a senior research chemist.

Edwin L Wiegand Co, Pittsburgh electric heat equipment manufacturer, has announced the appointment of *Frank B Knight* to the position of vice president and *G Edward Ammerman* to general sales manager of Chromalox, Inc, Murfreesboro, Tenn, a subsidiary.

Mr Knight, who joined Chromalox three years ago as general manager, now assumes a more direct responsibility for all company operations.

Mr Ammerman will now direct sales activities in connection with all Chromalox, Inc, electric heating products. He has been associated with the company for the past seven years as manager of the appliance products division.

●

Bertrand W Hayward was re-elected president of the Philadelphia College of Textiles and Science and *Everett L Kent*, chairman of the board, Kent Mfg Co, was re-elected Philadelphia Textile Institute Foundation president at the annual meetings of both corporations and their trustees held recently.

Re-elected to the College board for three-year terms were *Edwin L Dale; James Eskridge*, Burlington Mills; Dr Hayward; *Lloyd Koons*, Scholler Brothers, Inc; *Bernard Litvak*, Lit Brothers; *Russell C Osborne*, R C Osborne & Co; *Harry Reimer*, Henry Bach Associates; *Edgar Schlesinger*, United International Corp; *Richard B Stehle*, Brehm and Stehle; and *Ralph Whitaker*, Fred Whitaker Co.

Newly elected to the College board for three-year terms were *Joseph Seitcheck*, Philadelphia Clothing Manufacturers Assoc; and *Marshall Palmer*, J P Stevens & Co, Inc.

Newly elected to the College Board for two-year terms were *James Creese*, Drexel Institute of Technology; *Louis C Pfeifle*, American Institute of Men's and Boys' Wear; and *Ingram Bergman*, Bergman Knitting Mills.

At the trustees' meeting, the following officers were re-elected in addition to Dr Hayward for the coming year: *W Lyle Holmes*, Archibald Holmes & Sons, chairman; *William F MacDonald*, E F Houghton & Co, first vice president; *C Scott Althouse*, second vice president; *Julius Zieget*, PCTS, secretary and treasurer; and *Thomas Hyndman*.

The trustees passed a budget in excess of $600,000 for the operation of the college for the 1961-62 fiscal year.

Members of the Philadelphia Textile Institute Foundation's trustees who were re-elected for three-year terms were Dr Althouse; *Michael Daroff*, H Daroff & Sons; *Jay Lipsey*, The Jay Co; *Theodore B Hayward*; Mr Holmes; Mr Ken; *Ernest E Rettberg Jr*, Scholler Brothers, Inc; and *Edward T Taws*, Fletcher Works, Inc.

Other officers re-elected in addition to Mr Kent at the Foundation's meeting were Theodore B Hayward, first vice president; *Lindsey H Mason*, Philadelphia Dye Works, second vice president; *Richard S Cox*, PCTS dean emeritus, executive secretary & treasurer; and Mr Osborne, secretary.

●

New assignments for two members of the technical service department of Solvay Process Division, Allied Chemical Corp, have been announced.

James F Adams Jr has been transferred to the New York Office as assistant to the director of sales. *Alexander H MacDonell succeeds* Mr Adams as manager of technical service in the Syracuse, NY, office.

Mr Adams has served as manager of Solvay's technical service department since 1956. Mr MacDonell has served as assistant manager—technical service since February, 1961.

●

J W Misamore has been appointed advertising and sales promotion manager of Armour Industrial Chemical Co, Chicago, Ill.

Mr Misamore was previously advertising and sales promotion manager of the Koroseal Division of B F Goodrich Co at Marietta, O. Prior to that he handled publicity for B F Goodrich Chemical Co in Cleveland.

The Enjay Chemical Company, New York, NY, a division of Humble Oil & Refining Co, has assigned a resident butyl latex representative to each of its three marketing divisions—Eastern, Central and Western.

The three latex representatives and their locations are: *John B Winkler*, 1024 South Ave, Plainfield, NJ; *Peter M Heard*, 3020 West Market St, Akron, O; and *David H Hess Jr*, 615 South Flower St, Los Angeles, Calif.

Mr Winkler joined the company in March, 1960, after a period with the Alco Oil & Chemical Corp.

Mr Heard served at the Humble Oil & Refining Co refinery at Bayonne, NJ, until he joined Enjay last February.

Mr Hess joined the company a year ago.

●

E L Patton has been named assistant director for industrial development of the U S Department of Agriculture's Southern Utilization Research and Development Division.

Mr Patton had been chief of the Division's Engineering and Development Laboratory since 1958 and will continue to serve in that capacity until a successor is appointed.

It was stated that the primary purpose of the newly created post of assistant director for industrial development is to bring about closer relations between industry and the Division and to increase the use of agricultural products through the encouragement of industry to adopt research findings more quickly.

●

David A Colker, for several years vice president in charge of sales for National Drying Machinery Co, Philadelphia, arranged for a leave of absence, as of July 1, to reorganize The Chemical Packaging Co of Florida.

Although he is no longer associated with National in the above-mentioned capacity, he will continue to serve the company as a director and technical consultant.

Two of the men who have worked closely with him in both sales and engineering service will continue in charge of these two activities—*George J Schillinger Jr* as sales manager, and *William Poole* as manager of customer engineering services.

GENERAL CALENDAR OF COMING EVENTS

AMERICAN SOCIETY OF MECHANICAL ENGINEERS, TEXTILE ENGINEERING DIVISION

Nov 1-2 (Annual Meeting———Massachusetts Institute of Technology, Cambridge, Mass); Apr 11-13 (Spring Meeting———North Carolina State College, Raleigh, NC)

CHICAGO SECTION, AMERICAN CHEMICAL SOCIETY

Sept 5-8 (11th National Chemical Exposition———Chicago Amphitheatre, Chicago, Ill)

FIBER SOCIETY

April 11-13 (North Carolina State College, Raleigh, NC)

INTERNATIONAL TEXTILE MACHINERY EXPOSITION

Sept 1962 (3rd Exposition, Hannover, Germany)

NARROW FABRICS INSTITUTE, INC

Nov 13-15 (Statler-Hilton, New York, NY)

NATIONAL COTTON COUNCIL OF AMERICA

Nov 8-9 (1961 Chemical Finishing Conference———Sheraton Park Hotel, Washington, DC); Oct 3-4, 1962 (1962 Chemical Finishing Conference———Sheraton Park Hotel, Washington, DC)

NATIONAL RETAIL MERCHANTS ASSOCIATION

May 20-23 (Fibers, Fabrics and Finishes Exposition———New York Trade Show Bldg, New York, NY)

SCHWEIZERISCHER VEREIN DER CHEMIKER-COLORISTEN

October 12-14 (Symposium on "Permanent Finishing 1961"——— Swiss Federal Institute of Technology, Zurich, Switzerland)

SYNTHETIC ORGANIC CHEMICAL MANUFACTURERS ASSOCIATION OF THE UNITED STATES

Sept 12, Oct 10, Nov 14 (Luncheon Meetings———Palm Terrace Suite, Hotel Roosevelt, New York, NY); Dec 7 (Annual Meeting and Dinner———Hotel Roosevelt, New York, NY)

UNION OF PURE AND APPLIED CHEMISTRY

August 6-12 (18th International Congress of Pure and Applied Chemistry———Montreal, Canada)

WORLD CONGRESS FOR MAN-MADE FIBERS

May 15-18, 1962 (2nd World Congress, London, England)

CHARLES P RAYMOND, for over 55 years president and manager of the Charles P Raymond Service, Inc, 294 Washington St, Boston, Mass, a confidential employment service for textile, paper and pulp mill executives, died very suddenly July 19, drowning while on his vacation.

He was a vice president of the Boston Industrial Home; treasurer of the Massachusetts Technical and Commercial Employment Association and a past master of the Prospect Lodge of Masons at Roslindale.

He is survived by two brothers, Harry Raymond of Newton, Mass, and H Nelson Raymond of Middleboro, Mass.

●

EDWARD F HAYES, executive vice president of Riggs & Lombard, Inc, finishing machinery manufacturer, Lowell, Mass, recently succumbed to injuries received in an automobile accident. Mr Hayes was 52 years old.

Previous to joining Riggs & Lombard, he had been vice president and general manager of the Talbot Mills, North Billerica, Mass, for many years.

A 32nd-degree mason, Mr Hayes held membership in Spicket Lodge 85, F&AM, Salem, NH, and was a member of the Scottish Rite Masonic bodies in Nashua, NH, the New Hampshire Consistory and Bektash Temple, order of the Mystic Shrine of Concord, NH. He was also a member of AATCC and other textile associations.

●

NOEL L FAWCETT of Toronto, Canada, died last month after a brief illness.

Mr Fawcett, through his firm, Fawcett and Co, Ltd, served as Canadian sales agent for The Chemstrand Corporation as well as other large companies, including Rieter Machine Works of Switzerland; Thomas Burnley and Son, London; N Heydemann and Company, England; Botany Wools, Ltd, Sydney, Australia and Pacific Wools Ltd, Melbourne, Australia.

A native of England, Mr Fawcett attended Cheltenham College and Corpus Christi, Cambridge University, both in England. He settled in Canada in 1939 and founded Fawcett and Co shortly thereafter.

He is survived by his widow.

●

J WILLIAM WALSH, one of the old-time dyers of skein silk, died July 2 in Greenville, SC.

Born in Lowell, Mass, in 1884, Mr Walsh was with La-France Industries in Philadelphia, Pa, and Pendleton, SC, for many years. During his later years he was associated with McCarty Aniline & Extract Co, Charlotte, NC, in the southern area.

His son, Parker Walsh, is superintendent of dyeing and finishing at Brookline Fabrics, Inc, Greenville, SC.

●

BENJAMIN L WHITTIER, a member of the faculty of the North Carolina State College of Textiles for the past 13 years, died June 20 in Georgetown, Mass, from injuries received in an automobile accident. When the accident occurred, Prof Whittier was on route to his summer home in Ogunquit, Me.

Professor Whittier, a native of Lowell, Mass, joined the North Carolina State College textile faculty in 1948 as head of the Department of Fabric Development and Construction.

He occupied the Edgar and Emily Hesslein Fund Professorship, which was established at State College by the Neuse-Hesslein, Inc, exporters of cotton goods and operators of textile plants in the Southern states.

Prior to his career at NC State College, Whittier was a fabric development engineer with Mount Vernon-Woodberry Mills, Inc, Baltimore Md, a position he held for 24 years.

Prof Whittier was educated in the public schools of Lowell, Williams College, Harvard University Business School, and the Lowell Technological Institute.

Prior to joining the Mount Vernon-Woodberry Mills staff in 1924, Prof Whittier served in the Navy during World War I and later received practical training in Lowell and Boston textile plants. During World War II he was a consultant on fabric costruction for the textile section of the military planning division of the Quartermaster Corps in Washington.

He has been active in the work of the American Society for Testing Materials Committee D-13 on textiles of which he was chairman of subcommittee A-1, which involves all cotton textiles. He has also been a member of the society's advisory committee.

Prof Whittier was also a charter member of the Fiber Society and was a member of its governing council.

He is survived by his wife, a son, two daughters, and four grandchildren.

NEW PRODUCTS AND DEVELOPMENTS

New Acid-peroxide Bleaching Process for Colored Yarn Cotton Piece Goods

Becco Chemical Division of FMC Corporation, New York, NY, has announced the availability of a new acid-peroxide process for bleaching cotton piece goods, which is said to give excellent color brightness.

The bleaching solution is a mildly acid hydrogen peroxide composition which is said to be noncorrosive to any stainless-steel processing equipment at any temperature customarily used in bleaching operations. Moreover, the new process reportedly does not use any chemicals that are hard to wash from the cloth or form scale-deposits on the equipment. It thus is claimed to provide an excellent method for bleaching any fabrics earmarked for dyeing. It reportedly has been established that the chances of catalytic damage to the fabric are greatly minimized.

The new process has been field-tested under the supervision of Becco's textile research and development team. It is being made available to all firms in the American textile industry on a non-exclusive basis under Becco's traditional licensing policy. Becco field representatives will arrange plant demonstrations.

The new acid-peroxide bleaching process was developed primarily for bleaching colored yarn materials composed of cotton and other cellulosic fibers, or blends of cellulosic and synthetic fibers. Naphthol reds and blacks as well as certain vat dyes that are sensitive to bleaching reportedly can now be bleached by this new process without any mark-off or change in color tone. The colors are said to attain their full brightness.

These results, it is claimed, make the new acid-peroxide bleaching process very suitable for use on multicolored fabrics, gingham, striped sheets, toweling with colored borders, and similar products.

Cotton cloth bleached in commercial J-box equipment with the new Becco acid-peroxide bleaching process is said to have shown excellent physical characteristics.

The new process reportedly can be carried out in existing J-box equipment with only minor changes or none at all; it can also be carried out in jigs or dyebecks.

●

NeoCryl A-410; A-400

Polyvinyl Chemicals, Inc, 26 Howley St, Peabody, Mass, has developed acid-soluble and acid-dispersible copolymer emulsions called NeoCryl A-410 and NeoCryl A-400, respectively. Actually, they are said to be a new species of polymer emulsions. Both emulsions are not affected by water, soap or alkaline detergents even after repeated exposure, yet can be quickly and easily removed with mild acidic cleaners, it is claimed.

According to Daniel B Witwer, Polyvinyl Chemicals' vice president, the new emulsions contain functionally active groups that can interact with carboxyls, acid chlorides, acid anhydrides, epoxies, aldehydes, lactones, and sulfhydrils such as may be present in natural and synthetic fibers, coatings and films. Apparent applications, therefore, would include textiles (as antistatic agents and to improve dyeability).

The new emulsions are said to impart tough, super clear, high gloss finishes. Both emulsions are light tan in color, of very fine particle size, and reportedly resemble in appearance acrylic and styrene polymer emulsions that have been in common use for many years.

●

Piccopale A-55 Emulsion

A new, reportedly low-cost hydrocarbon resin emulsion, Piccopale A-55 Emulsion, is being produced by Pennsylvania Industrial Chemical Corp, 120 State St, Clairton, Pa. This product was developed for the vulcanized latex industry as a different type of reinforcing resin for all types of latex. Use of this resin at the 20% replacement level is said to yield lower cost, higher tensile strength, improved modulus, elasticity, and increase tack in uncured films. It is reported to be compatible with all types, such as GRS, SBR-2000, vinyl toluene—butadiene and natural rubber.

For a copy of descriptive Bulletin PPN-105 or additional information, contact Arthur M Patureau, advertising manager, Pennsylvania Industrial Chemical Corp, 3460 Wilshire Blvd, Suite 604, Los Angeles 5, Calif.

Acid-Dyeable Orlon Acrylic Fiber

Commercial availability of a new form of Orlon acrylic fiber—reportedly offering the knitting industry economical color styling through cross-dyeing in piece goods—has been announced by the Du Pont Company.

Using the new Orlon Type 44 acrylic fiber in combination with Orlon Type 42 acrylic fiber, multicolor styling effects reportedly are possible using single-bath piece-dyeing techniques. The new fiber is said to be acid-dyeable and was engineered to complement conventional basic-dyeable Orlon Type 42 acrylic fiber.

Du Pont recommends the industry try the five-yarn system in basic styling ideas. It employs 100 percent Type 42, 100 percent Type 44 and blends of the two types in the following proportions: 90 percent Type 42 with 10 percent Type 44; 67 percent Type 42 with 33 percent Type 44 and 50 percent of each type. This is said to afford optimum balance of versatile styling potential and number of yarns needed.

With each yarn accepting a different amount of dyestuff, five variations of two colors reportedly may be obtained in a single bath to produce stripes, bars, heathers, argyles, and other fancy patterns.

These various blends of types of Orlon can be cross-dyed with no staining of either fiber during dyeing, it is claimed. Colors are said to be fast to 140°F washing and show at least 40 hours fastness in the Fade-Ometer. Fastness is also said to be outstanding in drycleaning, hot-moist pressing, and under crocking and high perspiration conditions. Initial whiteness of Orlon Type 44 acrylic fiber reportedly results in clear, bright shades in cross-color effects and there is said to be excellent color stability to heat and use exposure. The good initial whiteness of both Orlon Type 42 and Orlon Type 44 means that bright pastel shades can be dyed on either or both fabrics, it is claimed.

Blends of the two types of acrylic fibers are expected to gain rapid acceptance in knitwear, particularly in sweaters, socks, and jersey fabrics. Use of these blends in woven fabrics also is expected as development work progresses.

It is stated that, in knitwear, fancy coloring patterns produced by piece dyeing will make it possible for sweater, sock, and jersey fabric manufacturers to carry out special color promotions in various geographic areas with little or no delivery delays and allow them to fill specific color orders quickly.

It is further stated that, in woven fabrics, cross-dyeing of Orlon Type 44 and Type 42 acrylic fiber combinations will make possible a broad variety of styled fabrics in lightweight coats, sport shirts, suit, and dress fabrics.

Currently available in three- and six-denier forms, Orlon Type 44 acrylic fibers are priced at $1.33 a pound for three-denier and $1.23 a pound for six-denier.

●

Levelol 74; Onyxset LC

Onyx Chemical Co, 190 Warren St, Jersey City 2, NJ, has announced two new products of general interest to the industry.

Levelol 74 is a newly available retarding and leveling agent designed to produce level dyeings on wool and wool blends. This product has been under extensive production trials in a limited number of mills for over a year, and Onyx states that it has received an enthusiastic endorsement wherever it has been tested. It is now in full production.

Levelol 74 contains an ingredient identified by Onyx only as "X-63", which is said to assure level dyeing, increase in color value, and improvement of lightfastness and resistance to wet crocking.

Onyx has announced also the development of a new cyclic reactant resin to be known as Onyxset LC, which has been produced to provide "wash-and-wear" finishes for cottons. Fabrics treated with Onyxset LC are claimed to have greater shrinkage control, greater scorch resistance, and lower residual odor than those processed with triazone resins.

Onyxset LC is described as "a clear, colorless liquid, easily soluble, and with unlimited storage stability". It is stated that 10 to 15% of the product, as supplied, is sufficient to treat most cotton fabrics properly.

Onyxset LC is in full production, and available for immediate delivery in less truckload, truckload and tankwagon quantities.

Orthomat Micro-camera

A fully automatic microphotographic camera that reportedly fits any microscope and has both detail and field-integrating exposure mechanisms has been developed by Ernst Leitz GmbH of Wetzlar, West Germany, and introduced in the United States by E Leitz, Inc, American firm which distributes Leitz scientific instruments and the Leica camera line.

The new Orthomat micro-camera is said to incorporate problem-solving features far more diverse in application than presently available equipment. With a film magazine of 36 exposures, a researcher can take pictures of 36 different subjects.

It was shown for the first time last month in New York at the Fourth International Conference on Medical Electronics, combined with the Fourteenth Annual Conference on Electrical Technics in Biology and Medicine.

The extraordinary light-sensitive photocell is a photo multiplier tube, designed by RCA. This tube produces a current from the available light, charging a capacitor to a predetermined voltage. A gas discharge tube then starts the discharge, operating a relay; the electrical vibration-free shutter opens and closes, ending the exposure; and the film is transported by one frame. The researcher reportedly can operate the camera rapidly by foot pedal as he watches through the microscope and makes adjustments with his hands.

The Leitz Orthomat is claimed to be the first to achieve both built-in detail as well as integrating measurements, operated by two "push-buttons." An integrating measurement refers to an entire area. A detail measurement allows for correction of any particular detail within the microscopic field.

The film magazine reportedly can be changed at any time, place or interval. It is claimed that exposures on color film can be changed to black and white work, and vice-versa, in two seconds. The self-contained 35-mm camera has interchangeable cassettes to hold any type of film desired.

The range of exposure time is said to be great, including those of photography of fluorescent specimens—one-half hour exposures and longer—and photography of living specimens, which have to be caught at 1/100th of a second.

Four New Drimarene-Z Reactive Dyes

Release of four new Drimarene-Z reactive dyes—a yellow, a golden yellow, a navy, and a bordeaux—has been announced by Sandoz, Inc, 61 Van Dam St, New York 13, NY.

All are recommended by Sandoz for printing and pad dyeing, and are stated to have the special characteristics of this class of reactive dyes, including brilliance of shade, high fastness to washing, and easy rinsing of unfixed dye.

Drimarene Golden Yellow Z-R paf is described as "a reddish shade of yellow, with good build-up." It reportedly does not stain the "ground" color or white during soaping, even when printed at twice the standard depth.

Drimarene Yellow Z-5GL paf is a brilliant yellow, reportedly with very good lightfastness, even after resin finishing, and excellent fastness to washing. It is being suggested by Sandoz for the dyeing of grounds for discharges, as it is white dischargeable.

Drimarene Bordeaux Z-BL paf is a deep blue-red reactive dye which can be used for maroon and brown shades.

Drimarene Navy Z-2RL paf is a rich, reddish shade of blue. In heavy percentages it is said to be particularly useful for economical navies. In lighter depths it can be used for bright royal blues.

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Pocket Calculator

A pocket-sized, slide-rule type calculator which is said to permit easy conversion of common yarn numbers to the new tex universal yarn numbering system has been prepared by the Fibers Division of American Cyanamid Company, 111 West 40th St, New York 18, NY.

The calculator is intended to eliminate computation in converting denier numbers, cotton and worsted counts or woolen runs into tex units, a standardized numbering system proposed by the American Society for Testing Materials for all branches of the textile industry.

Anticipated as being of service in simplification for mills using a variety of fibers, the tex system is intended to provide a single basis for measurement of yarns, regardless of the fibers involved. Lack of interchangeability in measuring yarn size, fineness, linear density or number has been regarded as a problem for all branches of the industry.

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Standard Laboratory pH Meter 115

$175 Including Electrodes

WRITE FOR BULLETIN No. 225

A full-fledged pH Meter of remarkable accuracy and stability — simple in operation and maintenance — fast and dependable in service.

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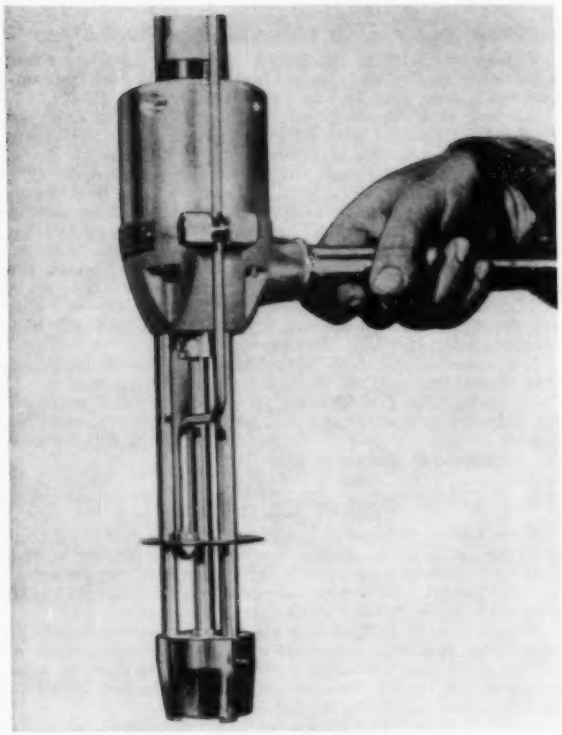
THERE'S A RIGHT WAY TO HANDLE H_2O_2, TOO!

fmc Becco Chemical Division

101 East 42nd Street, New York City

Why not let Becco suggest the best handling system for your particular needs? With its four-fold engineering service, Becco—most experienced producer of H_2O_2—can serve you well. Including survey, proposal, installation and inspection.



Typical air-driven, portable, high-speed mixer offered by Barrington Industries

Air-driven Homogenizing Mixers

Air-driven portable high-speed mixers for laboratory, pilot, or small batch applications are available from Barrington Industries, Inc, 185 Union Ave, Providence 9, RI. These special, lightweight units reportedly are finding wide usage where highly inflammable or explosive materials need to be mixed, emulsified, dispersed or homogenized. The mixers are said to incorporate an exclusive closed/open turbine convertible feature offered on standard Barrington mixers and to be available to handle capacities from three gallons to as high as 25 gallons. ¼-HP models reportedly weigh nine pounds.

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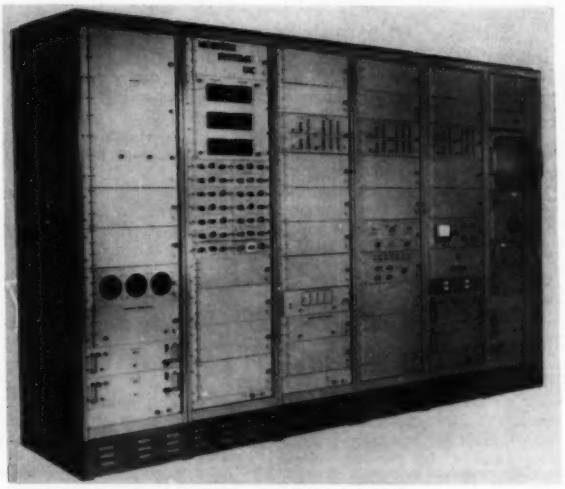
MSI Series 7000 Digital Data Recording and Alarm Scanning Systems

A new line of standard Series 7000 digital data recording and alarm scanning systems for automation of textile wet processing has been announced by Monitor Systems, Inc, a subsidiary of Epsco, Inc, Dept 28, Fort Washington Industrial Park, Fort Washington, Pa. Series 7000 systems are said to utilize the "building-block" technique throughout. Through use of the modular design principle and selection of the appropriate black boxes from the variety of standard building blocks available at MSI, the Series 7000 reportedly can be designed to meet the accuracy, speed, and reliability specifications of virtually any wet processing application without costly over-design. The Company submits that systems from the simplest to the most complex can be designed on practically an "off-the-shelf" basis without the long delivery times usually required in system development. The Series 7000 reportedly can be used to scan any process variable that is reducible to electrical form at speeds ranging from those of typewriter readout devices to speeds of presently available magnetic-tape-recording units. Systems with accuracies to 0.01% are said to be available. Electrical inputs from primary instruments, such as thermocouples, resistance temperature detectors, flowmeters, pneumatic instruments, or other transducers reportedly can be scanned and converted into digital form for readout in any format desired. Computing functions, self-check and self-repair features are said to be available. The Company ascribes the highest possible alarm scanning reliability to the MSI Series, crediting it with providing true digital comparison of set points against variable.



7250 Digital data system

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Research Project NR

A new nonresinous finishing process for cotton cloth was recently announced by Joseph Bancroft & Sons Co, Wilmington 99, Del. Entitled temporarily Research Project NR, pending assignment of a trademark, this chemical process for cottons is similar to one which the Company developed for rayon last year.

The principles involved reportedly are based on the concept of permanent modification of the cotton fibers by a chemical process that, while completely excluding resin, adds substantially to the comfort, stability, and "wash-and-wear" properties of the fabric. Because of these factors, it is believed that the most important immediate application will be to fabrics for men's dress shirts. Other potential end uses include work clothes, domestics and uniforms.

The absence of any resin and the permanent change in the chemical composition of the fibers is said to assure an extremely durable "wash-and-wear" performance guaranteed for the life of the garment. Regardless of the frequency or method of laundering, the stability reportedly is permanent, with no progressive shrinkage, and the crease resistance and wrinkle recovery are said to be sharply improved in both the wet and dry states. In addition, the lack of resin reportedly assures increased absorbency, a soft, pliable, nonirritating hand, and good protection against any yellowing or loss of strength due to chlorine retention. Bleaches reportedly may be used in nominal amounts.

As this process is compatible with resin, with little or no resulting degradation, the possibility has been mentioned of extending it to mechanical finishes, thus permitting production which would reportedly meet the standards for Everglaze cotton satins, chintzes, etc.

The chemicals used in Research Project NR reportedly are relatively inexpensive, and the equipment is essentially the same as that used for resin finishing. From a practical finishing standpoint, the processing is said to involve new, continuous, but comparatively uncomplicated procedures, utilizing commonly available equipment. Hence, a commercially uniform product reportedly is obtained with a minimum of problems and capital investment.

Fabrics treated by the NR process reportedly can be easily washed at home or by commercial laundry, and may be drip, tumble or spun dried. Drying time is said to be reduced by as much as 30% in comparison with cottons finished in the usual manner. Little pressing, except a light touch-up, is considered necessary. The fabrics reportedly have a lasting resistance to perspiration, mildew and bacterial damage, and thus also to odor.

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(concluded on page 64)

TECHNICAL LITERATURE

(Literature is available from sources listed in italics)

AIRCO VINOL——*Air Reduction Chemical & Carbide Co, 150 East 42nd St, New York 17, NY*——Sixteen-page bulletin describes Vinol fully hydrolyzed polyvinyl alcohols. It highlights a super hydrolyzed polyvinyl alcohol produced exclusively by Airco, Vinol 125, and fully hydrolyzed Vinol 230. Both grades are now available in commercial quantities from Air Reduction's new Calvert City, Ky plant. The resin and film properties of Vinol 125 and Vinol 230 are described in detail.

The use of fully hydrolyzed polyvinyl alcohols in the manufacture of textiles, paper, and adhesives is covered in the first section of the bulletin. The second section covers physical properties and handling, including modifications by precipitants and extenders. Numerous graphs, tables and charts present data of interest to chemists and engineers in many chemical processing fields.

●

ARYL MERCAPTANS——*James H Obey, coordinator, market development, Pitt-Consol Chemical Co, Research & Development Div, Library, Pa*——Brochure describes Pitt-Consol's new commercial and developmental line of aryl mercaptans. It covers the chemistry, suggested applications, recommended storage and handling methods, and literature references. Product data sheets list physical properties, forms and availability of new derivatives. The 30-page booklet also includes abstracted references concerning the use of these intermediates in dyes and pigments, oil additives, biologically active products, polymeric systems, antioxidants, rubber chemicals and pharmaceuticals.

●

PROCESSING CHEMICALS OF JACQUES WOLF & CO——*Literature Dept, Nopco Chemical Co, 60 Park Place, Newark 1, NJ*——Catalog No. JWL-100 describes processing chemicals of Jacques Wolf & Co, a subsidiary of Nopco Chemical Co.

The 16-page, two-color catalog lists products, furnishes a brief description of each and describes the end uses for principal applications in processing and printing of textiles and tanning of leather.

It also includes gums used in textiles, pharmaceuticals, food products, cosmetics, dentifrices; enzymes for various textile desizing applications and general products for many specialty uses.

●

PROPERTIES AND USES OF ORGANIC ACIDS AND ANHYDRIDES——*Union Carbide Chemicals Co, 270 Park Ave, New York 17, NY*——This 48-page booklet contains comprehensive data on acetic, propionic, butryic, 2-ethylbutyric, 2-ethylhexoic, acrylic, sorbic, valeric, and isodecanoic acids; acetic, propionic, and butyric anhydrides.

Included is information on physical properties; constant-boiling mixtures; specification limits; test methods; storage, handling, and shipping; toxicological properties; and selected literature references.

●

RTI REPORT OF PROGRESS——*Research Triangle Institute, Research Park, Durham, NC*——Sixteen-page brochure covers the history and ideas behind the establishment of the Research Triangle Institute; discusses its purpose, the staff, its organization for research, and the clients it serves; discusses its buildings and long-range plan for growth; and delves into such topics as operations research, design and analysis of experiments, control and optimization of industrial processes, program evaluation, sampling, reliability studies, statistical theory, natural products of chemistry, isotope applications, measurement of moisture, and polymer research.

The brochure concludes with a listing of the RTI board of governors and officers.

●

VALCHEM PRODUCTS——*Valchem, 1407 Broadway, New York 18, NY, or Langley, SC*——Bulletin 61, issued by Valchem, the chemical division of United Merchants & Manufacturers, Inc, indexes the approximately 75 products currently offered to the industry. All products are classified by end usage and each is briefly described.

●

WALL CHART OF "DO IT YOURSELF" COST REDUCTION PROGRAM——*35¢; Small Business Service, 65 Linden St, Malverne, NY*——Owners of small businesses will find this wall chart of considerable interest.

The cost-reduction program involved concerns itself with the recognition of two theories pertinent to small businesses. It forms these into a program that is designed to aid the small-business owner to secure greater financial profits in the operation of his business.

The two theories are:

1) The average employee can be upgraded as regards ability pertaining to improving company operations.

2) Many small-business owners do not know all they should about what is happening in their own company.

Give to the

AMERICAN CANCER

SOCIETY

THERE'S A RIGHT WAY TO HANDLE H_2O_2, TOO!

fmc Becco Chemical Division

It takes experience to determine the best way to handle H_2O_2. Becco's got it. Why not take advantage of Becco's fourfold engineering service, offering survey, proposal, installation and inspection. No obligation, of course.

161 East 42nd Street, New York City

New Products and Developments

(concluded from page 62)

Schwarz Universal Fiber Former

E W K Schwarz Inc, 101 West 31st St, New York 1, NY, has announced the development of a new fiber-forming machine of advanced design which is said to have a wide range of applications for determining the fiber-forming properties of all types of polymers. Called the Schwarz Universal Fiber Former, it reportedly is adaptable for producing monofilaments and multifilament yarns in all denier sizes from small gram lots to pound quantities. New concepts of filament formation are also under consideration to further expand the usefulness of the instrument, including interchangeable heads for conjugated and foam spinning.

Various spinning heads are furnished as 1) a horizontal head for wet or solution spinning, and 2) a vertical head for dry or melt-spinning.

A take-off unit reportedly provides for controlled stretching of the filaments, with or without added heat. Wet-spun samples can be continuously dried, it is claimed, and yarns or monofilaments can also be taken off with no stretch. Pump- and take-off speeds, and stretch rates are said to be continuously variable.

The fiber former is designed for use in evaluating mimimal amounts of polymers. It reportedly will handle from 20 g of material to several pounds depending on the types of spinning heads used. The unit features a cleaning facility that does not take it out of service for but short periods when changing from one polymer to another.

The over-all size of the machine is two feet wide by ten feet long and, except for the vertical melt and dry spinning head, stands about six feet high. The height of the melt spinning head is determined by the spinning speeds desired. The entire unit is self contained on an angle-iron frame with leveling screws in the feet. It is not necessary to fasten the machine to the floor. The fiber former requires 4000 watts of single-phase electric current, 60 cycles, 120 volts. Motors and heating units for other voltages and frequencies are available. When using the melt spinning quench bath, a supply of cold water and a drain are needed.

The wet spinning head consists of a dope reservoir, pump, filter, spinnerettes and coagulation bath. All metal parts of this system are fabricated of stainless steel. The reservoir, pump and filter are contained within a thermostatically controlled water bath with a range from room temperature to 100°C. Higher temperatures can be used by employing a liquid of higher boiling point. Thus "dope" with a higher content of resin than usually employed and of a viscosity too high for spinning at ordinary temperatures can be used. The spinnerette and coagulation bath are contained in a second thermostatically controlled trough.

The dope reservoir is totally enclosed. Inert gas or air pressures up to 50 psi can be applied to aid in priming the pump. The pump is a Zenith metering type and feeds through a sand pack filter into the spinnerette area. A 200-mesh screen is mounted inside the spinnerette to act as a final diffusion plate.

The coagulation bath is circulated continuously from a reservoir through the trough counter current to the filament travel for maximum efficiency. The trough is covered by a removable glass plate.

The standard head consist of three parts: 1) the pump system; 2) the hydraulic cylinder; and 3) the extrusion cylinder. A metered amount of oil is pumped into a hydraulic cylinder which in turn moves a stainless-steel piston in a heated SS cylinder. This last motion forces the molten polymer solution through a spinnerette and down toward the take-off mechanism. This head is said to be especially convenient for most laboratory work, since a complete cleaning when changing polymer samples reportedly can be done in approximately one to two hours. A sand filter placed immediately behind the spinnerette is disposable and need not be cleaned out. New filters are available at reasonable cost, it is stated.

The pump system is driven from the take-off motor through a continuously variable speed transmission. This permits changes in take-off speed without any change in the denier of the extruded filaments. A further refinement may be found in the use of two Zenith gear pumps which may be used either of two ways. One pump alone results in the full output going to the hydraulic cylinder. The two pumps are connected in series in a loop from the oil reservoir back to the same. The second pump is geared to rotate at 19/20 the speed of the first pump and will accept only 19/20th of the output of the first pump. The residual 1/20 capacity is bled from the loop between the two pumps, and goes to the hydraulic cylinder. This last speed is useful for slow-speed operation or for extrusion of low-denier fibers. Extrusion pressures up to 2500 psi are available with the standard head; higher pressure heads are supplied on order.

The temperature of the resin in the melt head is detected by a thermocouple and indicated and controlled to an accuracy of less than 1°C.

The take-off mechanism consists of two sets of three godet wheels each: the speed of each set is independently and continuously variable. Between the two sets of godet wheels is a space 48 inches long. Into this space can be fitted an oil bath or a radiant heater for heat-stretching the fiber and a snubbing peg. All three are standard equipment and are thermostatically controlled.

Three take-off speed ranges are available. Within any range, the speed is continuously variable; the speed ranges are 0.0 to 10, 3 to 50, and 20 to 300 meters per minute. Stretch between the two sets of godet wheels reportedly can be continuously adjusted from zero to approximately 2000%.

E W K Schwarz Inc makes available the services of this equipment and the experience of its staff for evaluation of new polymers or for other fiber research on a contract basis. Short-term, preliminary investigations are suggested for determining the desirability of longer-term projects.

•

Anti-Static Agent 575

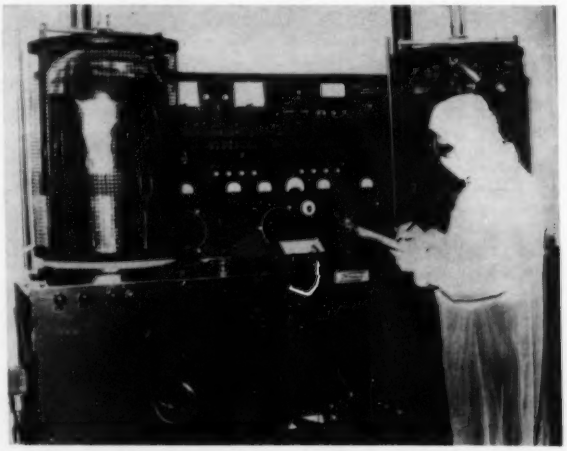
A new antistatic agent produced by E F Houghton & Co, Philadelphia, Pa, is said to stop static electricity from building up on automobile seat covers, fabric, plastics, paper, vinyl floor coverings, and metal. The product is known as Anti-Static Agent 575.

Static build-up in nylon uniforms has caused trouble at International Resistance Co, Philadelphia. IRC produces "XLT" high-reliability resistors for the Minuteman missile. A test meter that was used to check these resistors often gave erratic readings because of the static build-up. Dust was attracted to the charged uniforms, too. This created a "dirty" condition in the ultraclean room where IRC made its precision metal film resistors. Finally, when workers removed their uniforms, they often received static shocks.

Anti-Static Agent 575 reportedly stopped the static build-up. The product was added to the rinse water for these uniforms. In a plant test, untreated uniforms caused a deflection on an A Bass static meter and a Statigun. The treated uniforms reportedly showed no charge.

Anti-Static Agent 575 deposits an imperceptible monomolecular film that discharges static electricity into the air, according to Houghton. It is claimed that this product can be used in numerous material and assembly applications.

IRC's "XLT" resistor is said to be the smallest available hermetically sealed precision metal film type. It is made in an ultra-clean "white room" under absolute temperature and humidity control.



Nylon uniforms of workers at International Resistance Co, Philadelphia, must be free of static so as to avoid causing erratic meter readings. Use of Anti-Static 575 in rinse water for the uniforms is said to have stopped static build up.

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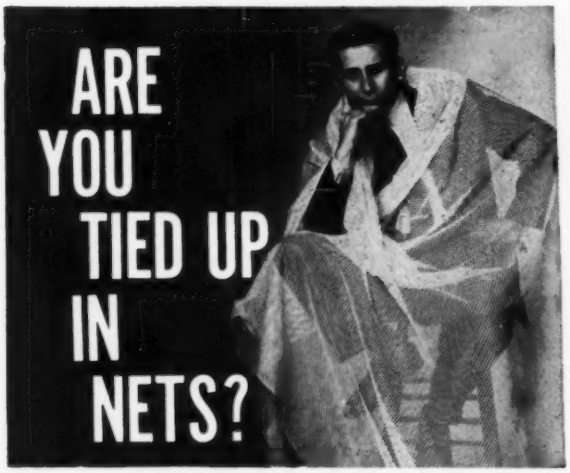

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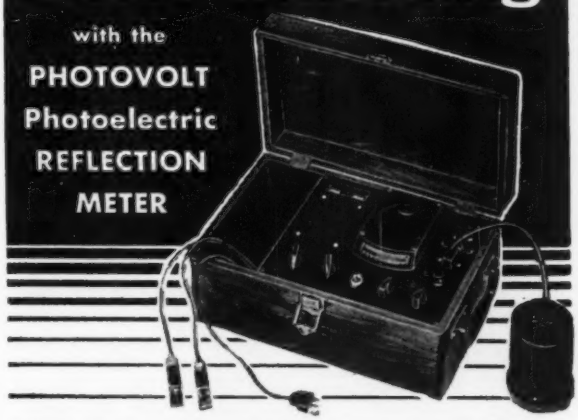

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WANTED: ASSISTANT MANAGER for dyestuffs application lab. Applicants with good overall experience and special knowledge of vat dyeing preferred. Located in New Jersey. Write Box No. 197

WANTED: EXPERIENCED DYER for circular knit goods. All fibers, particularly Orlon and wool. Must be able to relocate to Massachusetts and on a shift basis other than days. Write Box No. 194

• OPPORTUNITIES AVAILABLE •

WANTED: CHEMIST with experience in resin finishing and with a working knowledge of bleaching and dyeing to do general research and development work. Some traveling will be necessary. Laboratory is located about 100 miles from New York City. Write Box No. 195

WANTED: TEXTILE CHEMISTS OR COLORISTS with B.S. degree preferred, with knowledge of all types of dye applications for our Dye Testing Laboratories located in the Metropolitan Area. Peease send resume and salary requirements to: Personnel manager, VERONA-PHARMA CHEMICAL CORP., 169 West 52nd St., Bayonne, N. J.

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WANTED: SALES ASSISTANT—Representative of large American dyestuff, chemical fiber manufacturer, in Caracas, Venezuela, needs resourceful, adaptable sales assistant to develop new outlets. Knowledge of dyes, chemicals and Spanish preferred. Write Box No. 202

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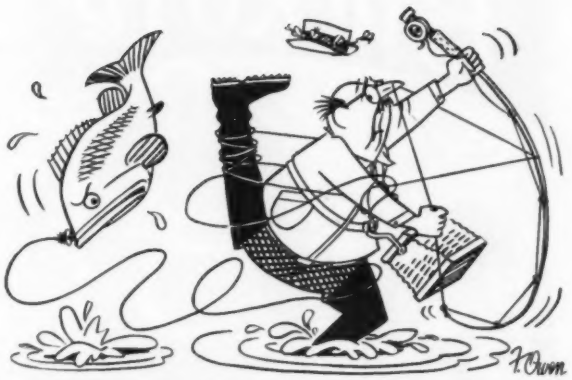

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American Dyestuff Reporter's AATCC Convention Issue will contain details on all the many Convention events and technical sessions, plus special stories on awards and contests, and interesting background and historical data, and complete Convention program.

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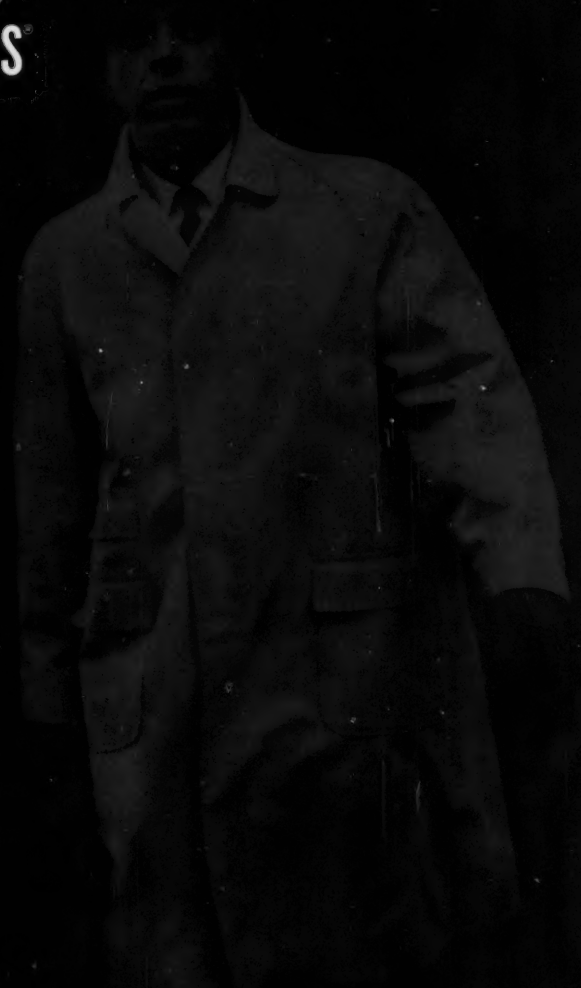

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